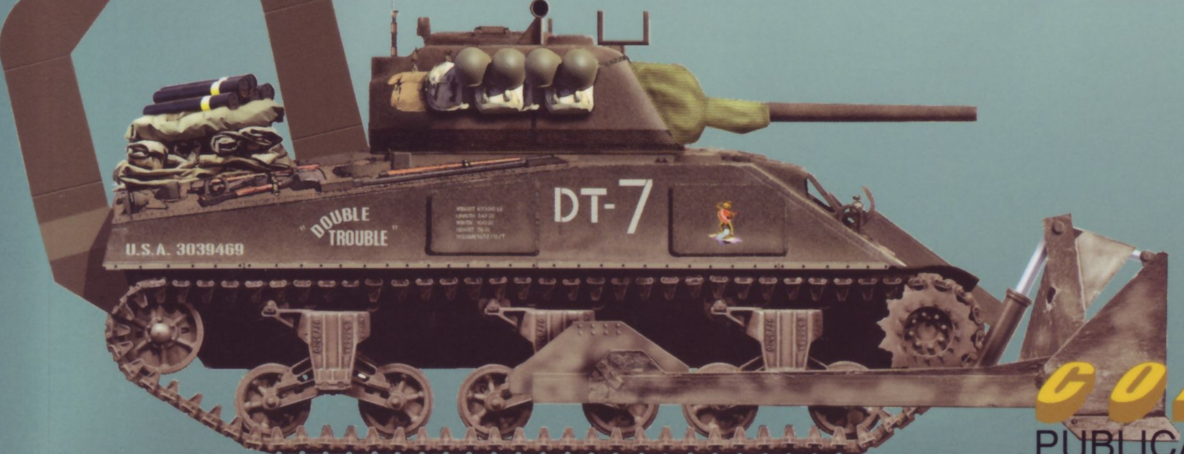
ARMOR AT WAR SERIES

7052

US Armored Funnies

US Specialized Armored Vehicles in the ETO in World War II

Steven J. Zaloga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Text and Color Plates by Steven J. Zaloga

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INTRODUCTION

The use of specialized armored vehicles by the US Army in the European Theater of Operations (ETO) in World War II is not well known, particularly compared to the famous British "Funnies" of Hobart's 79th Armoured Division. Yet the US Army made extensive use of a variety of specialized armored vehicles, some based on British designs, but many of its own conception. This photo book concentrates on the types that actually saw combat use in Europe in World War II, though some pilots that played a critical role in development are also shown. These specialized armored vehicles fall broadly into two categories: tank recovery vehicles and armored engineer vehicles, though other specialized types such as flamethrowers, rocket launchers, and amphibious types were also used in combat.

Unlike the British army, most US specialized armored vehicles such as flamethrowers, dozer tanks, and DD tanks were used in regular tank battalions, rather than concentrated in a specialized armored division. There were two significant exceptions. The Leaflet night fighting tanks, due to their secrecy, were confined to six special tank battalions, under the 9th and 10th Armored Group headquarters until their disbandment in October 1944. In addition, the US Army did form several specialized units to operate mine clearing equipment due to the special training needed with these vehicles. The first of these was the 6617th Engineer Mine Clearing Company formed in August 1943 in North Africa and which later operated the T3 Scorpion mine exploder and other specialized equipment for the 1st Armored Division and the Fifth Army in Italy. This unit later formed the 6638th EMCC which became the special armor unit of the Seventh Army that landed in southern France in August 1944. In November 1944, Bradley's 12th Army Group reorganized three of the Leaflet night fighting battalions as special mine exploder battalions, starting with the 738th and 739th Tank Battalions (SMX) that served with the First and Ninth Armies in Belgium and Germany in 1944-45. The 740th Tank Battalion which was intended to serve with Patton's Third Army, had only been partially retrained at the time of the Battle of the Bulge, and so was rushed into combat as a regular tank unit. As a result, Patton's Third Army was the only major formation in the ETO without its own specialist tank battalion.

Tank Recovery Vehicles

The US Army was among the earliest proponents of fully-tracked medium tank recovery vehicles and made more extensive use of this type of vehicle than any army during the war. The US Army had used heavy wrecker trucks for light tank recovery until 1942, but with the wide-scale introduction of medium tanks, a heavier vehicle was needed. With production of the new M4 medium tank underway, in September 1942 the army decided to convert the older M3 medium tank into the T2 tank recovery vehicle (TRV). Conversion work began in October 1942 by fitting the vehicle with a Garwood Model 10-Y 5500 crane on the turret in place of the 37mm gun, adding a winch inside the fighting compartment and replacing the 75mm gun with a dummy gun. Baldwin began the conversion in October 1942 and completed 509 T2 TRVs through December 1943. There was enough demand for the vehicle that Baldwin was given two further contracts, one for the construction of 150 new TRV on the M3A3 chassis, and another for the conversion of 146 M3A3 and M3A5 medium tanks. All were completed by the end of 1943 and the vehicles were type classified in August 1943 as the M31 when using the M3 chassis, the M31B1 on the M3A3 and the M31B2 on the M3A5. The M31 TRV was first issued to the 1st Armored Division in Tunisia in March 1943, but these were not widely seen until the Italian campaign later in the summer. Although the M31 was superceded by the M32, many tank units already equipped with the M31 continued to use them in 1944-45 in France, the Low Countries, and Germany and it was the most common US Army TRV in the ETO.

By March 1943, the supply of M3 medium tanks for conversion to the T2 TRV was running out. A program began using the M4 medium tank and two configurations were examined, the T7 which resembled the T2 configuration with a Garwood crane on the turret, and the T5 which used a larger A-frame crane on the hull and a new fixed turret with a winch below. Trials found the T5 configuration to be superior and so it was accepted for production as the M32 TRV. Many versions of the Sherman tank chassis were used for the M32 and they were designated accordingly: M32 (M4 chassis); M32B1 (M4A1); M32B2 (M4A2); and M32B3 (M4A3). All the M32 were based on conversions of existing tanks except for 111 M32B1 which were built new. During the course of production, many improvements were made including a redesign of the turret from the original welded plate design to a rounded configuration. In 1945, some TRVs were built with the new HVSS suspension and other improvements and these included 37 of the M32A1B1 on the M4A1 chassis and 80 T14E1 on the M4A3 chassis. In total, some 1,764 M32 TRV were built or converted during the war, including the M32B1 (1,055); M32B3 (318); M32 (163); T14E1 (80); M32A1B1 (37) and M32B2 (26). Although accepted for production, the M32B4 on the M4A4 chassis did not enter series production. The M32 series first saw use in combat in the summer of 1944 in France, though some were later deployed in the Italian theater. The M32 and M32B1 were the most common versions in use in 1944-45 in the ETO.

Armored Prime Movers

Among the offshoots of the tank recovery vehicles were the prime movers designed to tow heavy artillery such as the 8 inch gun and 240mm howitzer. The M6 high speed tractor was under development for this role, but due to delays in its production, a version of the M31 TRV stripped of its recovery equipment was substituted as the M33 prime mover with 109 converted from December 1943 to March 1944. The M33 prime mover was used mainly by the heavy field artillery battalions deployed to Italy in the spring of 1944 including the 575th Heavy Artillery Battalion (8 inch) and the 697th and 698th Heavy Artillery Battalions (240mm). Due to shortages of the M31 for conversion, 24 M32B1 TRVs were converted into the M34 prime mover by removing its crane and specialist equipment, but there is little evidence this type was ever deployed into combat. Similar efforts were subsequently undertaken with surplus M10A1 tank destroyers and 209 were converted into the M35 prime mover from January to June 1944 by removing the turret and making a number of small changes on the hull. These first appeared in France in 1944 and were used by a number of heavy field artillery battalions including the 551st Field Artillery.

Combat Engineer Vehicles

The US Army began development of an Engineer Armored Vehicle (EAV) based on the M4 medium tank in 1943, but the lack of firm support from the engineers left the program in limbo. About 200 EAV kits were manufactured but never deployed. One off-shoot of the program was an effort to develop a demolition rocket for breaching anti-tank walls and other obstructions. An initial Navy design called the Mark 5 Demolition Rocket Launcher or Cowcatcher was developed in mid-1943 using 7.2 inch demolition rockets. This was mounted on the front of a M4A1 tank and had twenty launch tubes. The Engineer Board was not happy with this design since the rocket flame washed over the front hull of the tank. A more conventional design followed, the Mark 6 which mounted a box launcher 20 rockets above the turret, eventually being modified by army Ordnance into the enlarged T40 rocket launcher. This was accepted for small scale production in early 1944, and later designated as the M17 7.2 inch demolition rocket launcher.

Due to the lack of a US armored engineer vehicle, the US Army originally planned to obtain some British Churchill AVRE (Armoured Vehicle Royal Engineers) for engineer support during the D-Day landings. However, by the time that the formal request was placed to the British army for specialized equipment in February 1944, the Churchill had been dropped from the list. In its place, the army planned to use M4 tanks fitted with the T40 demolition rocket launcher. A small number of these were delivered to the 70th Tank Battalion in England in May 1944, but the type was very unpopular with tank crews since there was practically no clearance for the escape of the turret crew, and it was felt that the large amount of rocket fuel and explosive in the thinly armored launchers would be a real hazard on the beach. Firing trials in England found that the rocket launcher was little better than the normal 75mm gun in reducing seawalls, so none of the T40 rocket launchers were used on D-Day. In its place, the demolition teams used "Doo-zits" which were a wooden pallet pre-packaged with a half-ton of plastic explosives that were carried on a the blade of a dozer tank and placed against the sea wall. Although they were not used at Normandy, the T40 demolition tanks were used by the gapping teams of the three infantry divisions which landed in southern France during Operation Anvil on 15 August 1944, but they were very unpopular. Ordnance later tried to unload some of these despised weapons on tank units in Italy as an alternative to the T34 rocket launcher. This is covered below in the section on rocket launching tanks.

By far the most successful US armored engineer tank was the tank dozer. Development of the tank dozer began in March 1943 as a means to overcome beach obstacles and mines. In parallel to the official engineer program, there had been several attempts by local commands to develop tank dozers for various uses including mine clearance and other engineer tasks. Although the engineers examined these designs, they proceeded with their own program after contracting two firms, Le Tourneau and LaPlant-Choate which were well known for designing construction equipment. After tests in the summer of 1943, a modified design was accepted for use as the M1 tank dozer and manufactured at LaPlant-Choate. The first of these were shipped to Italy in the late spring of 1944 and used during the Anzio break-out operation in May 1944. The first M1 tank-dozer kits arrived in England in April 1944 and were assigned to the tank battalions spearheading the D-day invasion. Only six of the 16 tank-dozers assigned managed to get ashore on D-Day, but they proved to be very effective in eliminating beach obstacles. Tank dozers were in great demand afterward since they could be used for a wide variety of tasks besides clearing beach obstructions. The US First Army attempted to secure enough to provide each tank battalion with six dozers, though there were seldom enough to issue them on this scale. Curiously enough, a popular role for the tank dozers in the autumn 1944 fighting was as an improvised assault tank, as units found that a dozer tank with its blade raised was more survivable than normal tanks when used to lead a column.

The fighting in the Normandy hedgerows in June 1944 created significant problems for tank operations since they restricted the movement of US tanks. Since there were too few dozer tanks, various other methods were developed to penetrate the dense hedgerows. The earliest types were designed simply to create holes at the base of the hedgerow so that engineers could plant explosive charges to breach the obstacle. Since there would never be enough explosives to use this tactic on a large scale, other types of steel devices were tested to penetrate the hedgerow without explosives. One of the first of these, dubbed the "Salad Fork" was tested during an offensive near St. Lo on 11 July 1944. A better hedge-buster was subsequently developed by Sgt. Curtis Culin, and local production of the "rhino" was undertaken by First US Army ordnance units to equip several hundred tanks prior to Operation Cobra. There were several variations of the Rhino, such as the Douglas device devised by engineers of the 3rd Armored Division. Additional photos of these devices can be found in a previous book in this series "US Tank Battles in France" (Concord Armor at War 7050).

Mine Clearing Tanks

While the tank dozer was one of the earliest methods for clearing minefields, other approaches were also attempted. US engineers preferred mine rollers over flails due to their simplicity, and the T1 mine exploder was first tested on the M3 medium tank in early 1943. The US Army examined the British Scorpion flail following its successful debut with British forces in North Africa. Although ordnance officers felt it was excessively complicated, limited production of a slightly modified type designated as the T3 mine exploder was undertaken in the US in early 1943, eventually totaling 41 units. Some were rushed to Tunisia in April 1943. Unit records of the 1st Armored Division indicate that a small number of M3 medium tanks of the 1st Armored Division were fitted with "mine crushers" during the spring offensive in Tunisia in 1943, but it is unclear if these were the experimental T1 mine rollers or the T3 Scorpions. The T3 fitted on the M4 medium tank was later issued to the 16th Engineers of the 1st Armored Division which formed a special unit for their use, the 6617th Mine Clearing Company. They saw combat use during operations in the Anzio beach-head starting in April 1944, but were not very successful.

While the T3 was being used in the Mediterranean theater, Ordnance continued to work on mine clearing devices. Canadian units pioneered explosive breaching, with the tank pushing a long tube called a snake filled with explosives through the mine field and then detonating it to clear a path. The US Army began manufacturing this as the M2 and M3 demolition snake, and they were first used by the 16th Engineers in the Anzio beachhead in the spring of 1944 with little success. Another non-explosive means to breach a minefield was to plow the mines aside using a V-shaped dozer blade, called a mine scarifier. Ordnance developed the T5 mine scarifier, but the T5E3 did not enter production until March 1945. However, a small number of improvised mine scarifiers were built in Italy based on the M1 tank dozer, and these were used in small numbers by units of the US Seventh Army during Operation Anvil, the amphibious landings in southern France on 15 August 1944.

Lacking any practical means of mine clearing, the US Army turned to the British for equipment to use during the D-Day landings in Normandy. A February 1944 request included 25 Crab Flail tanks, an improved version of the Scorpion, as well as other mine rakes and rollers such as the Bullshorn plow, OAC Mk III plow, Harrows, and Centipedes. In the event, Britain was barely able to meet its own requirements for specialized equipment, so none of these arrived in US units in time for use on D-Day.

By the summer of 1944, a number of other US designed mine-rollers had arrived in theater including the T1E1 Earthworm, pushed by a M32 TRV, and the T1E3 Aunt Jemima, pushed by a modified M4 medium tank. The 6th Armored Division was one of the first units equipped with T1E3 mine exploders following a May 1944 demonstration in England which prompted the commander to request their use. Two T1E3 mine exploders were handed over to the 25th Armored Engineer Battalion and put on trials in France in the summer of 1944. In addition to the US built T1E1 and T1E3 mine exploders, the first supply of British Crabs was obtained, based on the February 1944 request. A total of 9 Crabs, 12 T1E1 and 27 T1E3 were used to equip companies of the 702nd and 744th Tank Battalions in July 1944 for Operation Cobra, the Normandy breakout operation in late July. In addition, the 2nd Armored Division borrowed 3 Crabs from the British though they ended up serving with the 747th Tank Battalion. By this stage, the M2 Snake demolition charge was also available along with a quantity of the British Conger explosive breacher, but were not used. The T1E1, T1E3 and Crab mine-exploders were used on a limited scale during Operation Cobra, but the lack of sufficient training undermined the effectiveness of these devices which were cumbersome to use in the best of circumstances.

The problems encountered during Operation Cobra prompted the US Army to turn over the mine exploders to specialized units, and three former CDL units, the 738th, 739th and 740th Tank Battalions, were reorganized as Special Mine Exploder battalions in the fall of 1944, though the conversion of the 740th was never completed. In addition, the 6638th Mine Clearing Company which had arrived in southern France with the Seventh Army in August 1944 with mine scarifiers and other equipment was again re-equipped with the newer minefield breaching equipment. These units were used for minefield clearing, and saw their most extensive use in early 1945. There was other sporadic use of mine clearing tanks by the US Army in the ETO in 1944, including the use of improvised demolition snakes to breach mine fields during the attack on the Metz fortresses in October 1944.

Bridging Tanks

The US Army was slow to recognize the need to field bridge-laying tanks to assist attacking tank units in breaching anti-tank ditches and other obstacles. In the Italian theater, the US Army was heavily dependent on British help. The 6617th Engineer Mine Clearing Company received 12 Churchill tanks with SBG (Small Box Girder) bridges. The 16th Engineers of the 1st Armored Division created their own improvised bridging vehicles by developing an attachment for M2 treadway bridges on the front of a M31 TRV prior to the Anzio break-out operation in May 1944. During preparations for the Operation Anvil amphibious landings in southern France on 15 August 1944, the 6617th EMCC transferred at least three British Churchill with SBG bridges to the US Seventh Army. These were used by the 6638th EMCC attached to the Gapping Team of the 3rd Infantry Division along with mine scarifiers and T40 demolition rocket launchers. There were a number of joint British and Canadian efforts later in Italy to explore other bridge-laying concepts, including the use of turretless Sherman Ark tanks to carry treadway and the Canadian "Plymouth" Bailey bridges to breach longer gaps. Some of the Sherman Arks were provided to the 1st Armored Division's new 1st Assault Company, a specialized unit that was formed to replace the 6617th EMCC after it was transferred to France. While the US Engineer Board in the US continued to work on Self-Launched Bridges, units in the field continued to improvise their own solutions. The use of TRVs to launch treadway bridge was used in France and Germany in 1944-45. The first known conversions in France were assembled for the assault on the Metz fortifications in October 1944. Subsequently, a number of tank units made similar conversions using both M31 and M32 TRVs.

Amphibious Tanks

The Allied amphibious landings in North Africa during Operation Torch in November 1942 convinced the US Army that a method was needed to land medium tanks during the initial assault. The Fifth Army Invasion Training Center (5AITC) at Port aux Poules, Algeria came up with the idea of waterproofing the tank and fitting it with trunks to provide air to the crew and engine. This permitted the tank to wade ashore in water to a depth of the top of the turret roof. Training was conducted by the 2nd Armored Division in the spring of 1943, and the deep wading tanks were used during Operation Husky, the invasion of Sicily, in July 1943. The successful use of this technique led to further development of deep wading tanks, including the design and manufacture of standardized kits which were used in later amphibious landings including Operation Overland in Normandy and Operation Anvil in southern France.

The heavy losses of British Landing Craft Tanks (LCT) during the Dieppe landings in 1942 convinced the British army of the need for a tank which could swim to the landing beach from about a mile off shore to avoid risking the LCT. This led to the development of the Duplex Drive (DD) Valentine and later the Sherman DD. US officers were shown early British trials with the Valentine DD tanks and in November 1943, the US Army established a requirement for 350 M4A1 DD tanks, enough for three battalions and an ample surplus for training and spares for use in the D-Day landings. Since Britain could not produce enough, 350 conversion kits were manufactured by Firestone and the tanks were converted at the Lima Tank Depot in Ohio starting in February 1944. Eighty of these tanks were transferred to the British for use on D-Day. The first M4A1 DD tanks arrived in England on 10 March 1944. They were popularly called "Donald Duck" tanks by the troops, though many tank crews also labeled them "30 tons of steel in a canvas bucket".

Three US tank battalions were equipped with the DD tank for the D-Day landings, the 741st and 743rd Tank Battalions at Omaha Beach and the 70th Tank Battalion at Utah Beach. This was opposed by some senior US officers who were concerned that the design wasn't robust enough in rough seas. This opinion was reinforced in April 1944, when a few DD tanks sank during pre-invasion training exercises off Slapton Sands. Critics of DD tanks advocated the use of deep wading trunks as had already been used in the landings at Sicily, Salerno and Anzio in 1943-44. As a compromise, the three battalions were equipped with a mixture of two companies of DD tanks and one company of deep wading tanks. As was feared, the DD tanks proved to be vulnerable to rough sea conditions and of the 57 DD tanks launched at sea on D-Day, 21 sank and many had to be landed directly on shore by their LCTs. Nearly all the deep wading tanks arrived safely on the beach.

Following the Normandy landings, 48 DD tanks were shipped to the Mediterranean theater for use during the August 1944 Operation Anvil landings in southern France. A total of 36 DD tanks were used during on 15 August with three tank battalions, the 756th, the 753rd, and the 191st Tank Battalions. Of these, 20 swam ashore and the remaining 16 were landed directly on the beach by their LCTs. The use of DD tanks in southern France was much more successful than in Normandy because the sea conditions were much calmer and the German opposition was negligible.

In November 1944 when the US Army first began planning future operations to cross the Rhine , there were only 118 M4A1 DDs still available, so British DDs were supplied to the US Army to make up for shortfalls. These included both the Sherman III (M4A2) and Sherman V (M4A4) DD tanks. In the event, far fewer DD tanks were used for the Rhine crossing than originally anticipated. Company C, 736th Tank Battalion with the Ninth Army crossed the Rhine on 23-24 March 1945, mostly equipped with British M4A2 DD tanks but with a few M4A1 DD tanks as well. The 748th Tank Battalion had 51 DD tanks, but a long road march to the Rhine damaged the specialized equipment and only 18 were floatable. A total of 8 were launched across the Rhine near Oppenheim on 23-24 March 1945, with one sinking. Ten more were ferried across. This was the last time that the DD tanks were used in an amphibious role during the war, though the tanks continued to serve as normal gun tanks with their skirts removed.

Rocket Tanks

The US Navy pioneered the use of rockets to supplement conventional artillery since they could be fired from landing craft and other small vessels that could not carry conventional guns. In 1943-44, the US Army began examining the use of these rockets as a means to supplement tank guns. The first efforts as mentioned above involved the use of 7.2 inch demolition rockets from the T40 launcher for breaching seawalls during amphibious landings. This was later standardized as the M17 Whiz-Bang launcher. This device was never very popular since its proximity to the turret roof created problems for the crew entering or escaping from the vehicle, and the rockets had a relatively short range, being intended for firing from only a hundred yards with a maximum range of barely a thousand yards. After being rejected for use on D-Day in Normandy, and after being used with little success during Operation Anvil in southern France, the army decided to hand over the surviving launchers to tank battalions in the Italian theater for possible use in the artillery role. The 752nd and 760th Tank Battalions each converted a tank platoon with four T40 Whiz-Bang launchers in mid-August 1944. These rocket platoons did not serve with their parent units, but were instead transferred to the 755th and 757th Tank Battalions for operations along the Gothic line. They were used in very small numbers and had modest results. In December 1944, the 525th Ordnance Battalion converted eight T40 launchers by replacing the 7.2 inch demolition rockets with the longer-range 4.5 inch aircraft rocket launcher. They served with the 752nd and 760th Tank Battalions and saw combat starting in March 1945.

The US Army had already developed a launcher for the 4.5 inch rocket as the T34, better known by its nickname as the Calliope. The original plan was to use these for obstacle breaching on D-Day, but this was rejected out of hand since it was felt that the high mounting of the launcher on the M4 tank would make it unstable in landing craft. After D-Day, the 743rd Tank Battalion had 30 Calliope launchers installed for a planned attack by the 30th Infantry Division in December 1944. However, the German attack in the Ardennes pre-empted this operation and the launchers were discarded without being used. The T34 was more extensively deployed in early 1945, and was used in small numbers at various times by the 2nd, 4th, 6th, 12th, and 14th Armored Divisions and by the 712th, 753rd, and 781st Tank Battalions. In general, the launchers were unpopular with tank commanders who felt that the artillery mission should be performed by artillery units and not tank units.

Flamethrower Tanks

During preparations for the D-Day landings, the US Army requested 100 Crocodile flamethrower tanks from Britain. Since the US Army did not want the complication of having to train on the Churchill tank, British officials agreed to adapt the existing Crocodile flamethrower to the Sherman tank. This delayed the program, and none were available on D-Day. By the time that production was ready in the summer of 1944, the requirement had passed and the program was cancelled. However, four Sherman Crocodiles had already been built, and they were later issued to 739th Tank Battalion (SMX) in November 1944. They were first used in combat in February 1945 in the assault on the citadel in Julich during Operation Grenade.

In the meantime, the US Army received a smaller US-designed tank flamethrower, the E4-5 which was mounted in the hull of the M4 medium tank in place of the hull machine gun. These arrived in the ETO in September 1944 and were first used in combat on 18 September 1944 by tanks of the 70th Tank Battalion. This flamethrower had much shorter range than the Crocodile and was not very popular in use; one tank officer called their performance "pathetic". They were issued on a scale of nine flamethrowers per separate tank battalion, but in the winter of 1944-45, enough had arrived that they were also offered to the armored divisions. Generally, they were mounted in M4A3E2 assault tanks due to their better armor, but they were also mounted in most other types of M4 medium tanks. They were used on numerous occasions in the fighting along the Siegfried line, but their short range and limited fuel supply undermined their tactical usefulness.

The lack of effective flamethrowers for attacking bunkers led US units to request the assistance of British Crocodile squadrons on several occasions. A Churchill Crocodile squadron from the 141 RAC was seconded to US VIII Corps during the assault on Brest in September 1944, and Squadron B, 1st Fife and Forfar Yeomanry was seconded to the Ninth US Army during the campaign between the Wurm, Roer, and Rhine rivers in 1944-45.

Night Fighting Tanks

The British Army came up with the idea of using searchlights fitted inside tank turrets to conduct night attacks, and referred to these secret tanks under the cover-name of Canal Defence Lights (CDL). A formation of CDL tanks would illuminate the battlefield with intense beams of light, blinding the German defenders while making their positions evident to attacking force. In November 1942, the US Army decided to build CDL tanks in the United States under the cover name of T10 Shop Tractors. Most US CDL tank were based on the M3A1 cast-hull medium tank instead of the riveted-hull M3 Grant used on the British CDL tanks. The M3 medium tank was selected for the CDL since it permitted the searchlight turret to be fitted while still retaining the main gun. This was important since these tanks were intended to fight, not simply illuminate the battlefield. A total of 497 T10 Shop Tractors were converted through 1944, and in operational use they were given the codename "Leaflet" tanks.

To maintain secrecy, the Leaflet tanks were deployed only with six separate "special" tank battalions: the 701st, 736th, 738th, 739th, 740th and 748th Tank Battalions (Special). They were trained at Camp Bouse in the remote Arizona desert to preserve the intense secrecy of the project. Three of the battalions were transferred to Normandy in August 1944, and the rest by September 1944. The downfall of the project was the agreement between Britain and the US that they would coordinate any operation jointly to take maximum advantage of the surprise factor. Furthermore, the Top Secret status of the Cassock project undermined its value since few field commanders knew about its role or capabilities. By the autumn of 1944 there was an urgent need for conventional tank battalions and so on 4 November 1944, four of the Leaflet tank battalions were converted into normal tank battalions, and the other two to mine exploder tank battalions.

In February 1945, with operations along the Rhine likely, 65 Leaflet tanks were taken out of depots to be used to guard key bridges against German night attacks. They were issued to three tank battalions: the 738th, 739th and 748th Tank Battalions. Usually a Leaflet platoon was deployed with each of the battalion's three medium tank companies so that two or three bridge sites could be protected. The first to be deployed was a platoon from Company C, 738th Tank Battalion which was used to defend the Ludendorff bridge at Remagen that had been captured by the 9th Armored Division. The Leaflet tanks were used to provide night illumination upstream from the bridge to prevent the Germans from sending boats or frogmen against the bridge. The other units were in action later in March, and were also used to provide night illumination to allow the engineers to work around the clock to erect temporary bridges over the Rhine. A Leaflet tank of Company A, 739th Tank Battalion sank a German barge on the night of 25 March with its 75mm gun. They were also used to provide fire support for a number of infantry operations during the fighting along the Rhine. The Leaflet tanks remained in operation through the middle of April 1945, but were gradually withdrawn as the US forces pushed beyond the Rhine into Germany, as the searchlights failed due to their prolonged use under combat conditions.

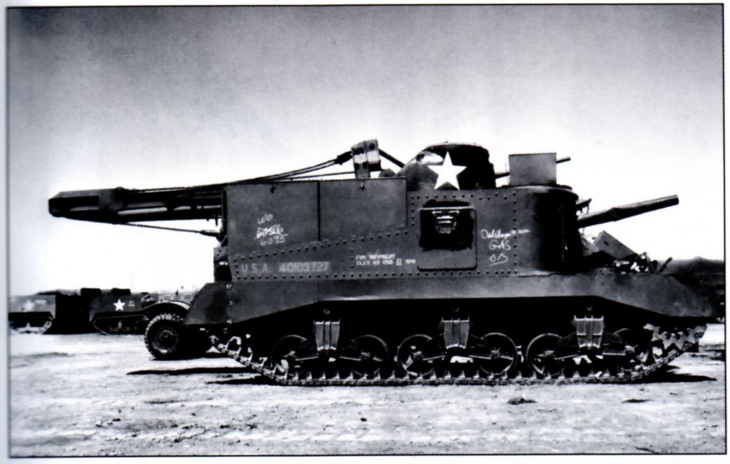
Besides the Leaflet tanks, the US Army was also working on infrared viewing equipment to permit tanks to operate at night. In contrast to the German efforts, the US infrared devices were designed mainly as driving aids, not for night fighting. In the event, they did not arrive in time for use in the ETO in 1945.

Sonic Tanks

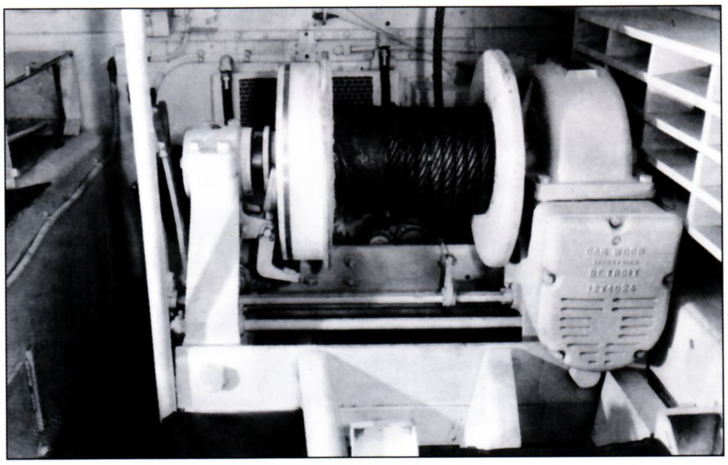
Another secret tank program was the so-called "Sonic Tank" a program to field a protected loudspeaker system that could be deployed near the front-lines to broadcast realistic tank sounds to fool the enemy regarding the location of major US units. The M10 tank-destroyer was selected for this deception scheme, and 24 were converted into "Special Cars" by deleting their main gun, and mounting a folding loudspeaker system into the turret well. These devices were also fitted to the M3 half-track, and later of the M39 armored utility vehicle. They were first deployed with the 3132nd Signal Service Co. (Special) during the fighting on the outskirts of Brest, France on 23 August 1944, to mask the location of the planned assault. A second company, the 3133rd, was deployed to Italy where they were used during operations in the Sericho and Po valleys.

All photos here are from US Army and US Navy sources from the collections of the National Archives and Records Administration, the Patton Museum, the US Army Military History Institute, and the US Military Academy at West Point. The author would especially like to thank Joe DeMarco, Pete Andrews, M.E. "Ossie" Orsbourn, and Bob Clifton for help on this book.

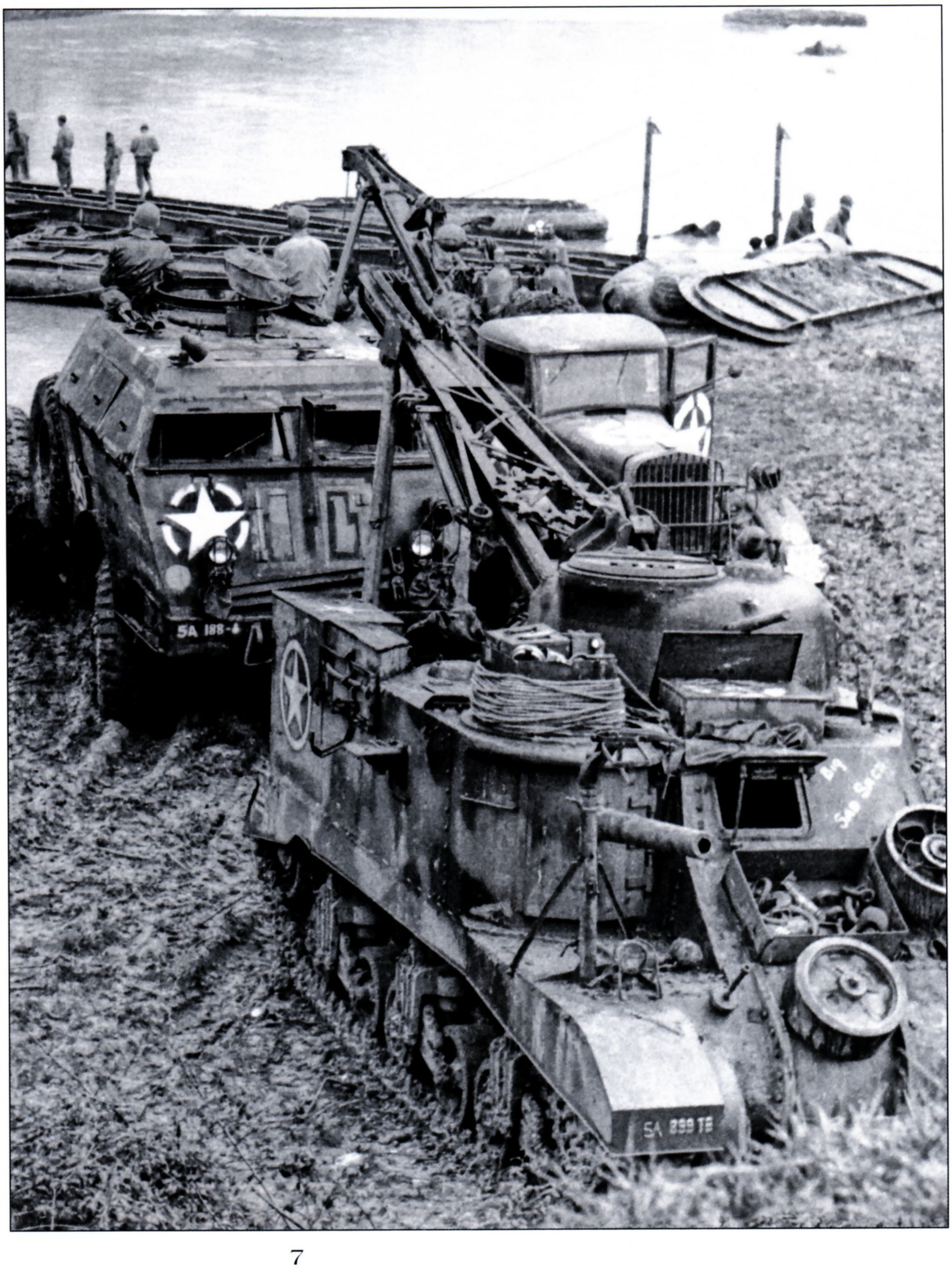
Tank Recovery Vehicles



A T2 TRV is seen in Oran in May 1943 prior to departing for the Sicily operation. Its dummy 75mm hull gun is damaged.

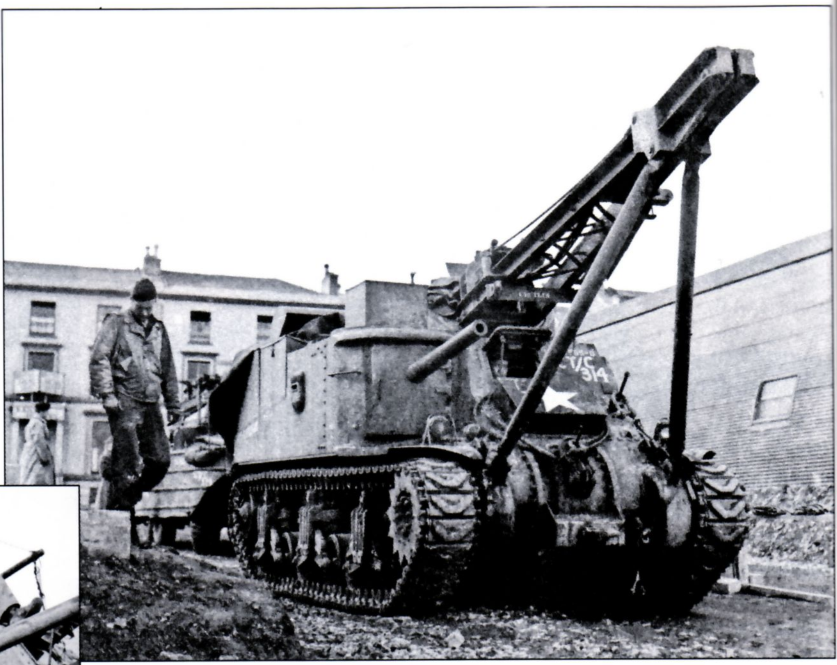


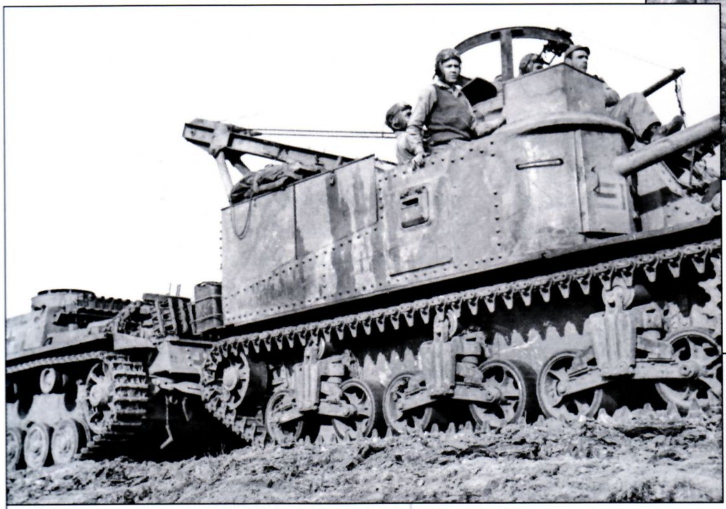
A useful detail shot showing the winch inside the fighting compartment of the M31 TRV.



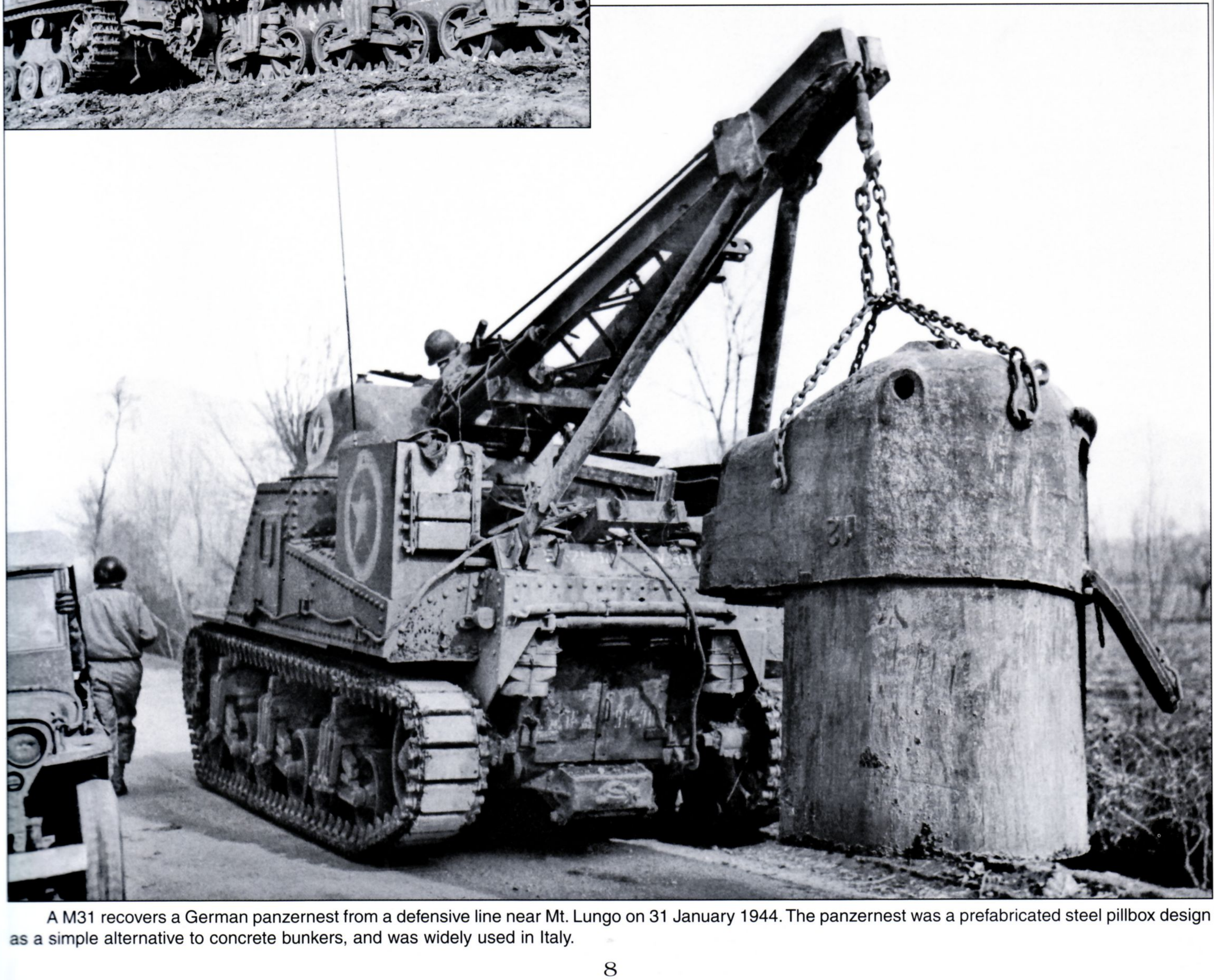
A M31 named "Big Sad Sack" of the 766th Tank Destroyer Battalion assists in river crossing operations along with a M25 tractor along the Volturno river on 29 November 1944. The bumper code identifying it as belonging to the 899th Tank Battalion is a fake.

An interesting example of one of the less common versions of the M31 TRV, the M31BI on the welded M3A3 chassis seen here on 21 December 1943 during the preparations for the Anzio landing.

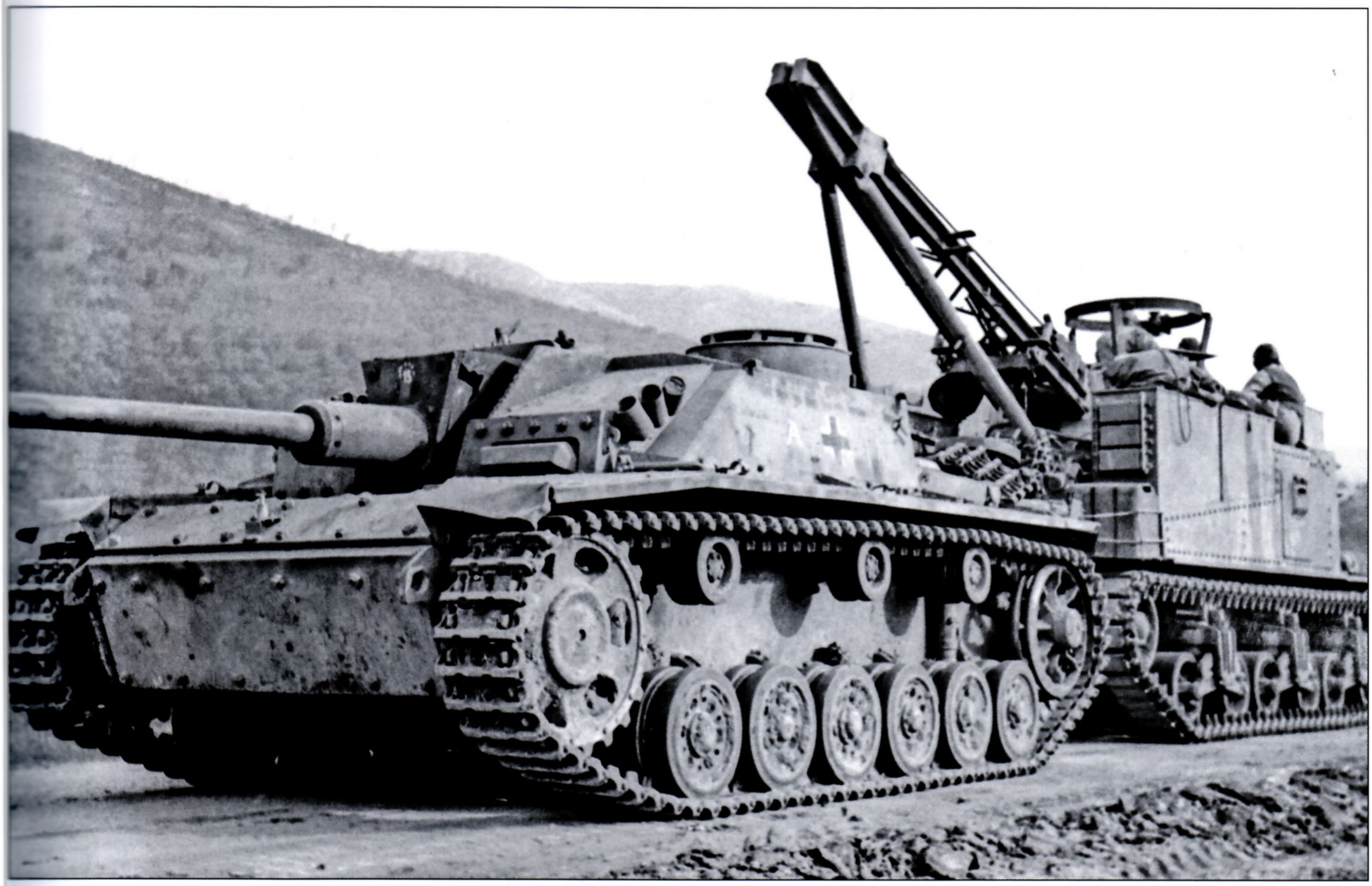




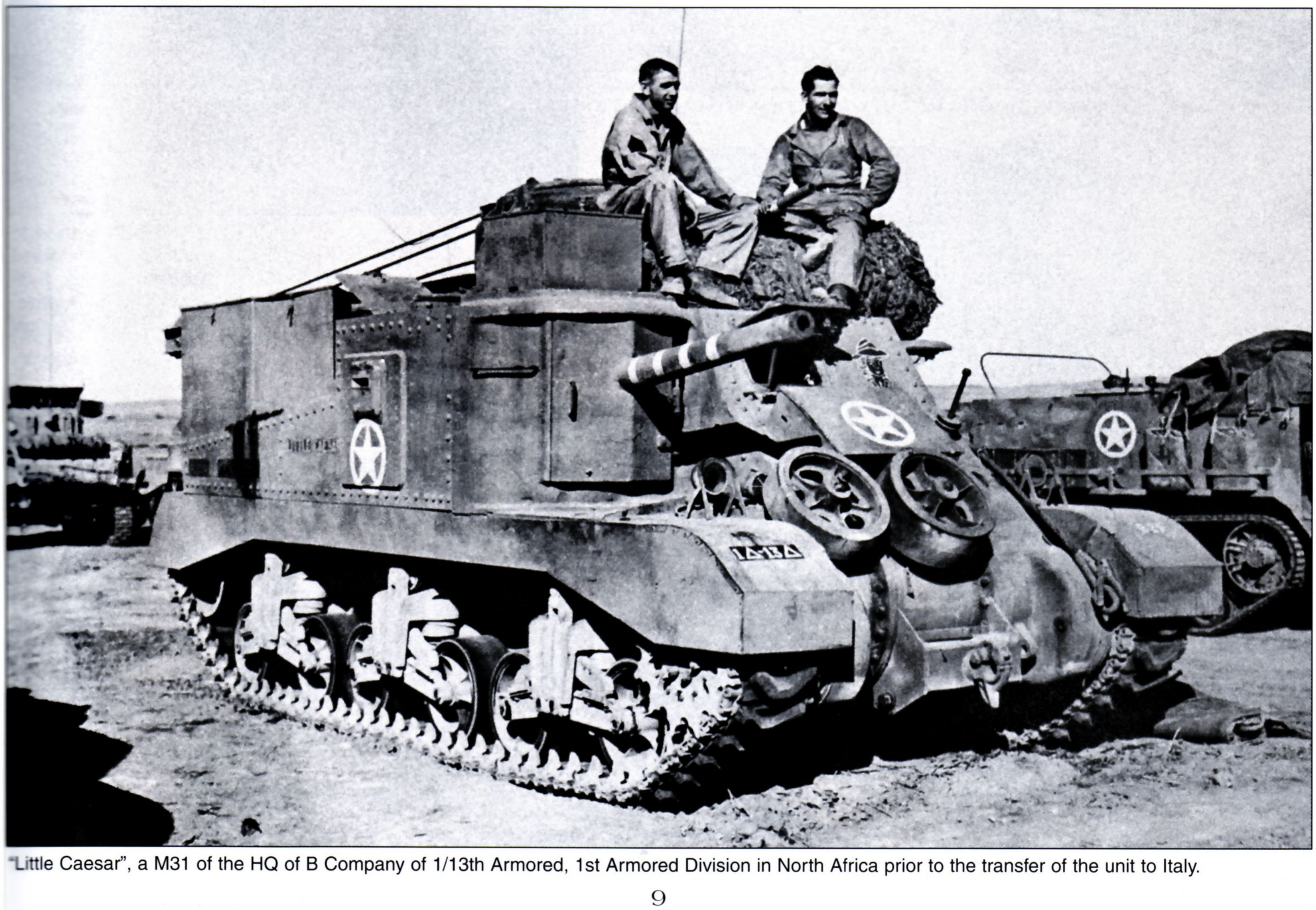
Another M31 in operation in the Mt. Lungo area on 13 January 1944 recovering a German StuG III assault gun. This particular vehicle has a machine gun ring mount over the turret, probably adapted from a truck ring mount.



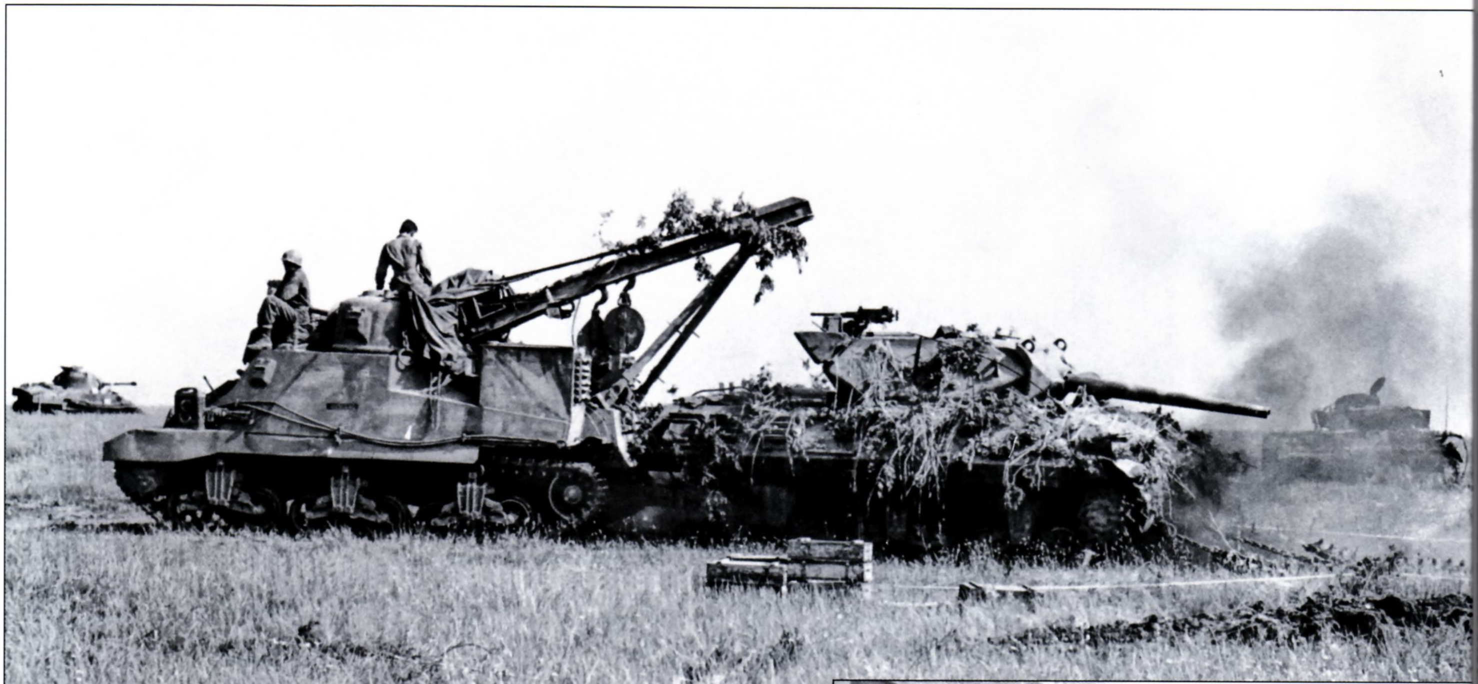
A M31 recovers a German panzernest from a defensive line near Mt. Lungo on 31 January 1944. The panzernest was a prefabricated steel pillbox design as a simple alternative to concrete bunkers, and was widely used in Italy.



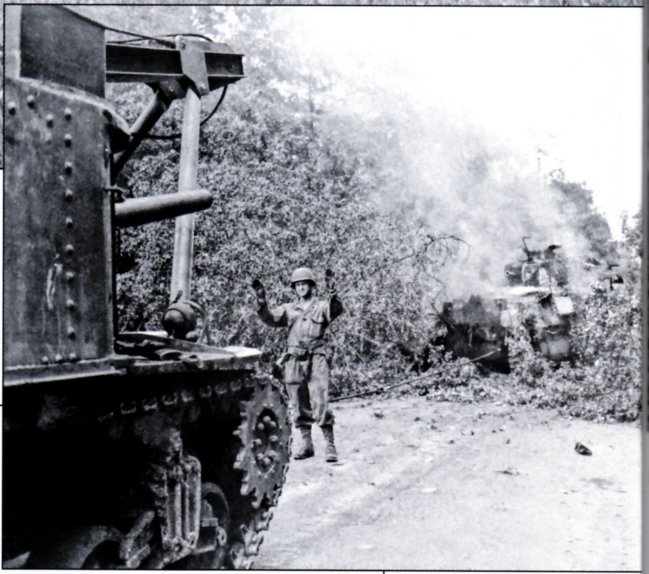
Another view of the M31 recovering the StuG III of Pz.Abt. 129 near Mt. Lungo on 13 January 1944.



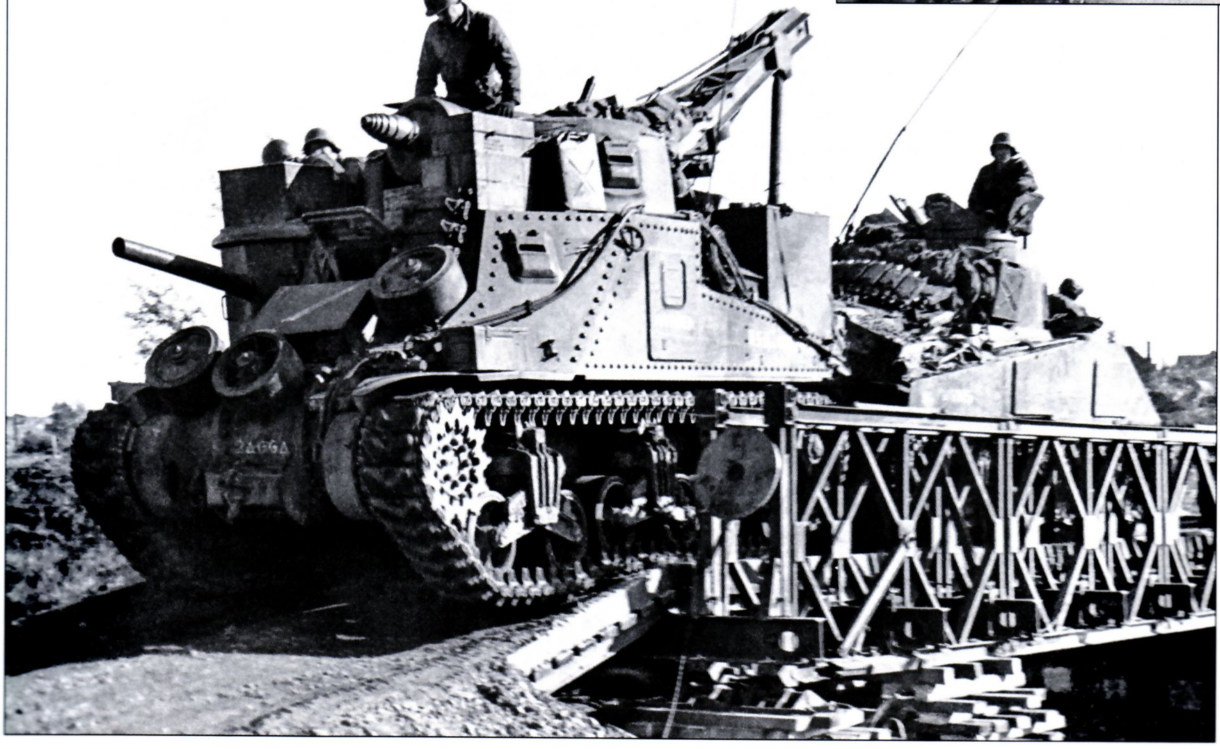
"Little Caesar", a M31 of the HQ of B Company of 1/13th Armored, 1st Armored Division in North Africa prior to the transfer of the unit to Italy.



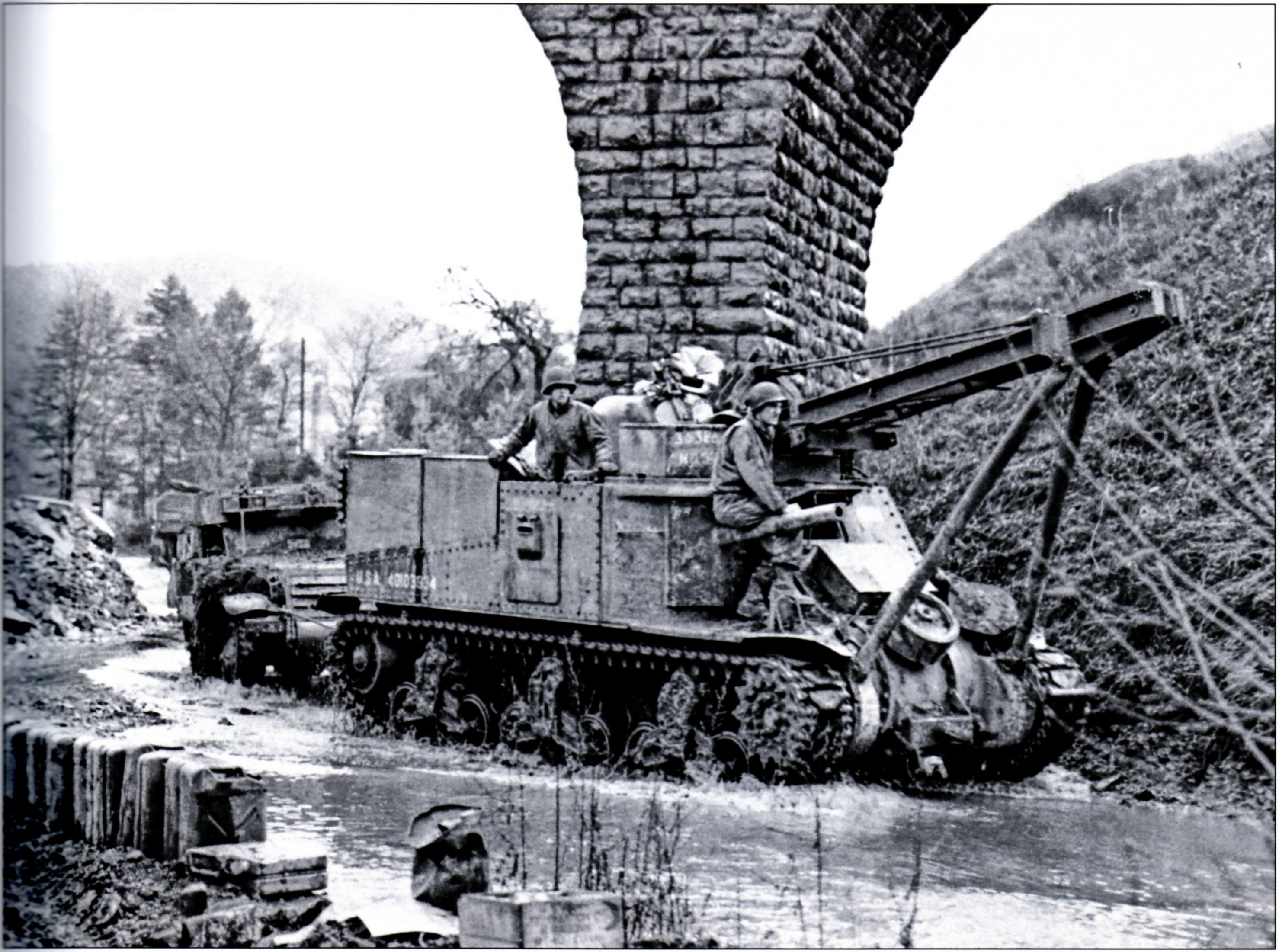
A welded-hull M31B1 is seen recovering a M10 tank destroyer near Cisterna during the break out from Anzio on 25 May 1944.



A M31 is used to remove a wrecked German Somua S-35 tank near Mongargis, France in late August 1944.

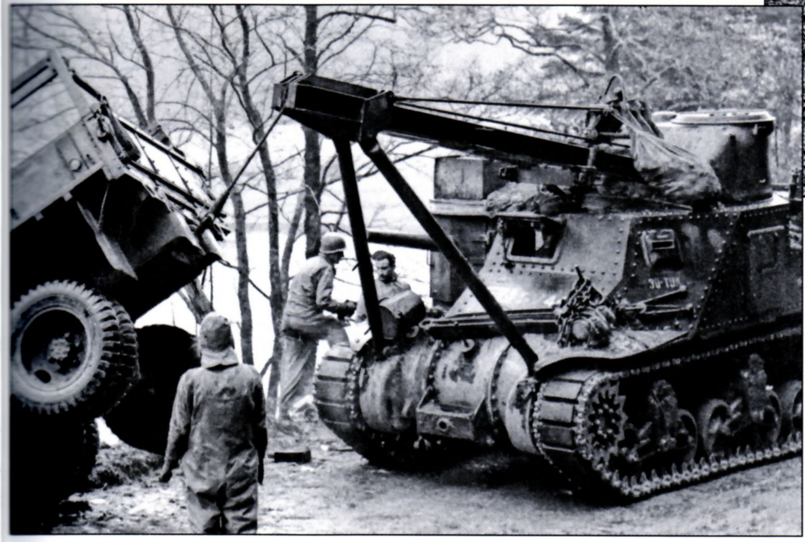


A M31 named "Invader" of 3/66th Armored, 2nd Armored Division pulls a damaged M4 across an engineer bridge near Palenberg, Germany on 15 October 1944.

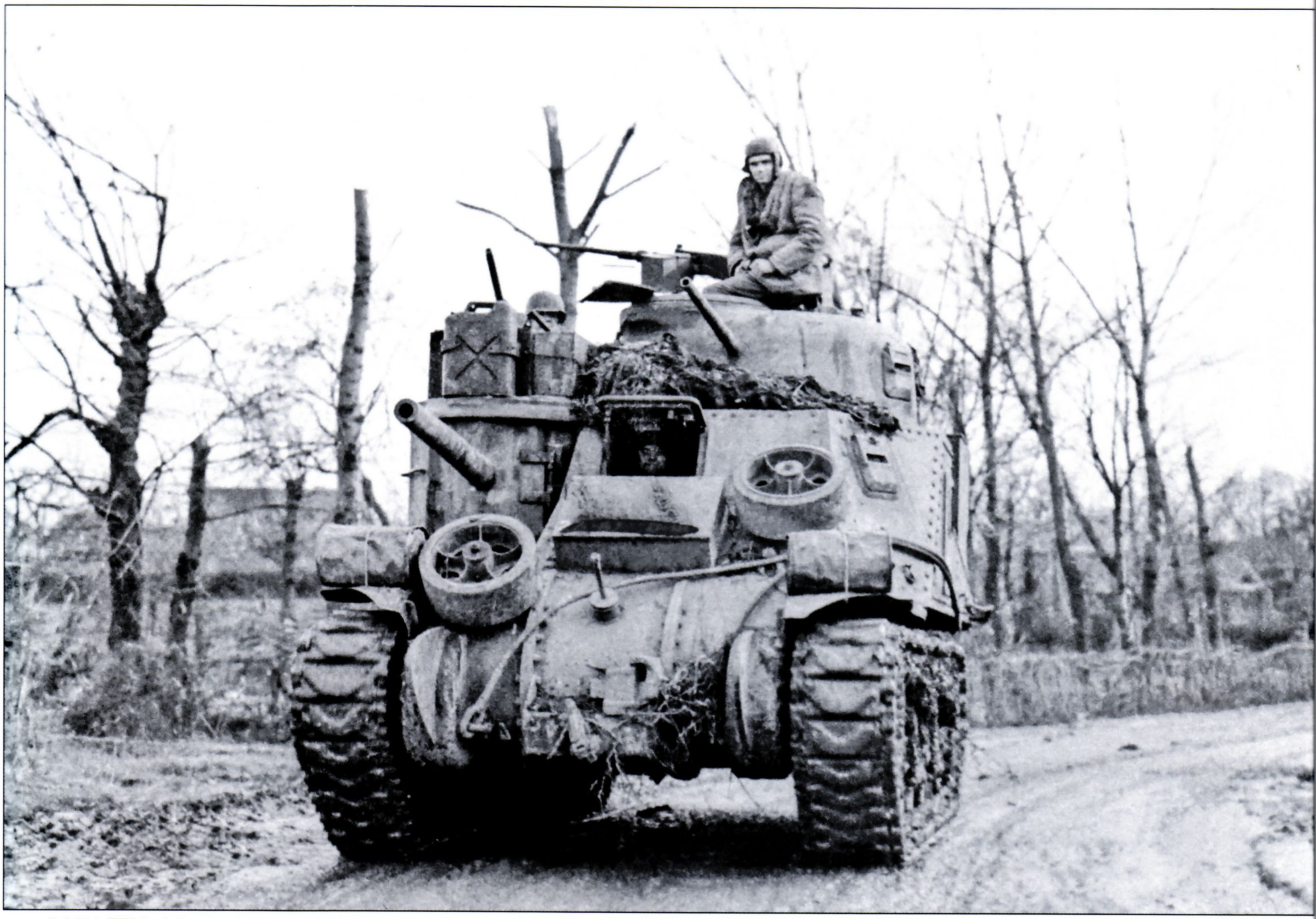


A M31 TRV of 32nd Armored, 3rd Armored Division drives under a damaged rail bridge near Stolberg, Germany on 22 October 1944, followed by a M3 half-track.

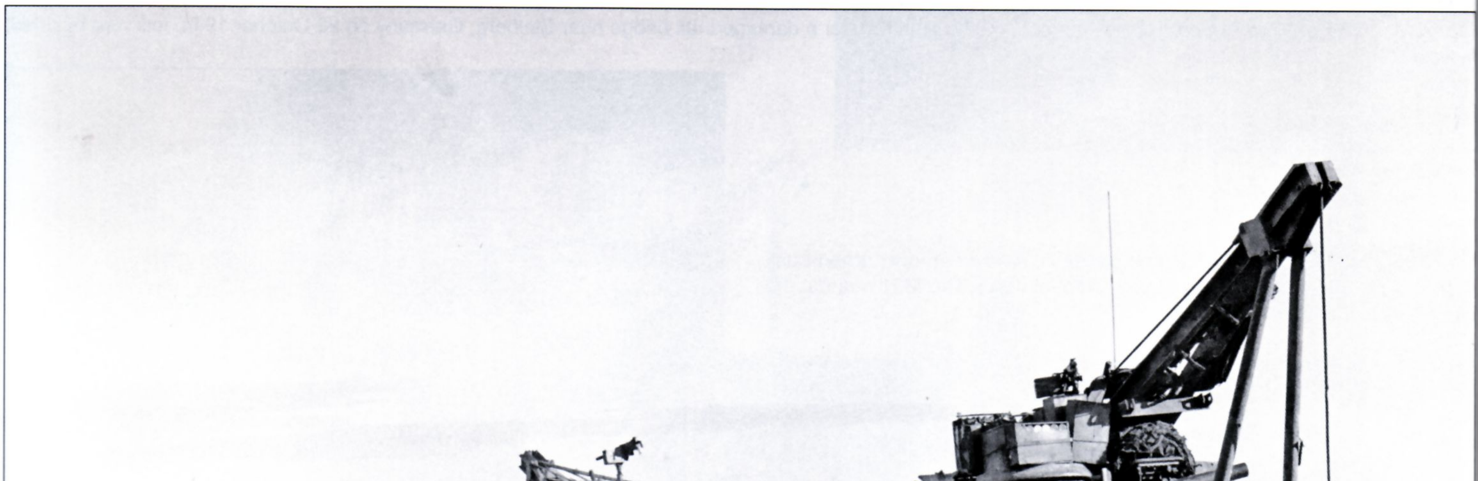
A pair of M31 of the 753rd Tank Battalion, recover an overturned truck near Les Rouges Eaux, France on 22 October 1944. The M31 nearest the camera is named "Sad Sack".



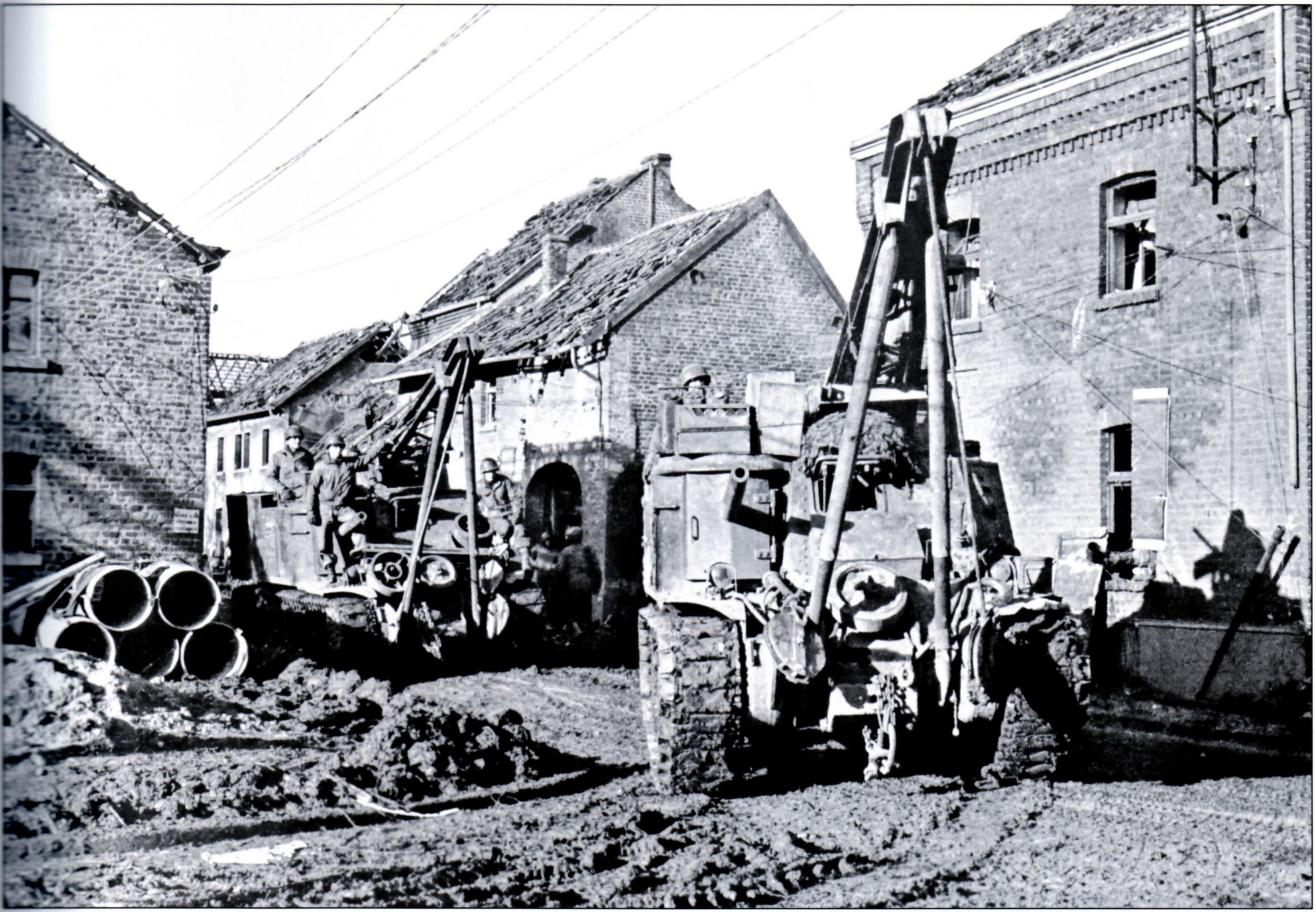
A close-up view of the M31 named "Sad Sack" during the recovery effort by the 753rd Tank Battalion on 22 October 1944.



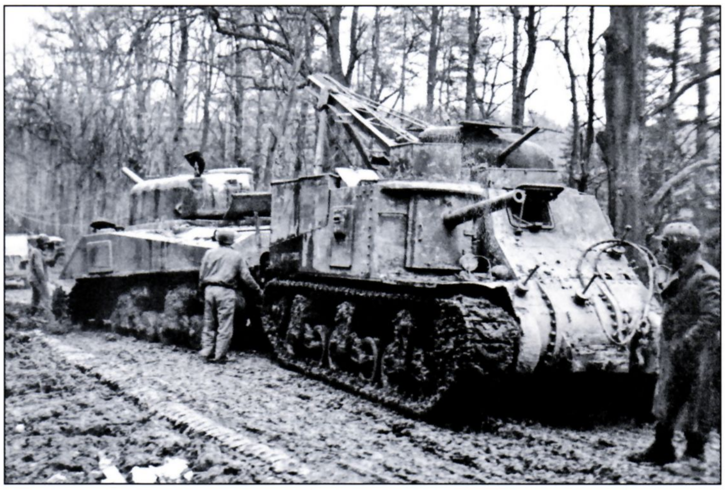
A M31 TRV of the 2nd Armored Division near Loverich, Germany on 18 November 1944. Two large attachments have been welded to the final drive housings presumably for use as an improvised treadway bridge layer.



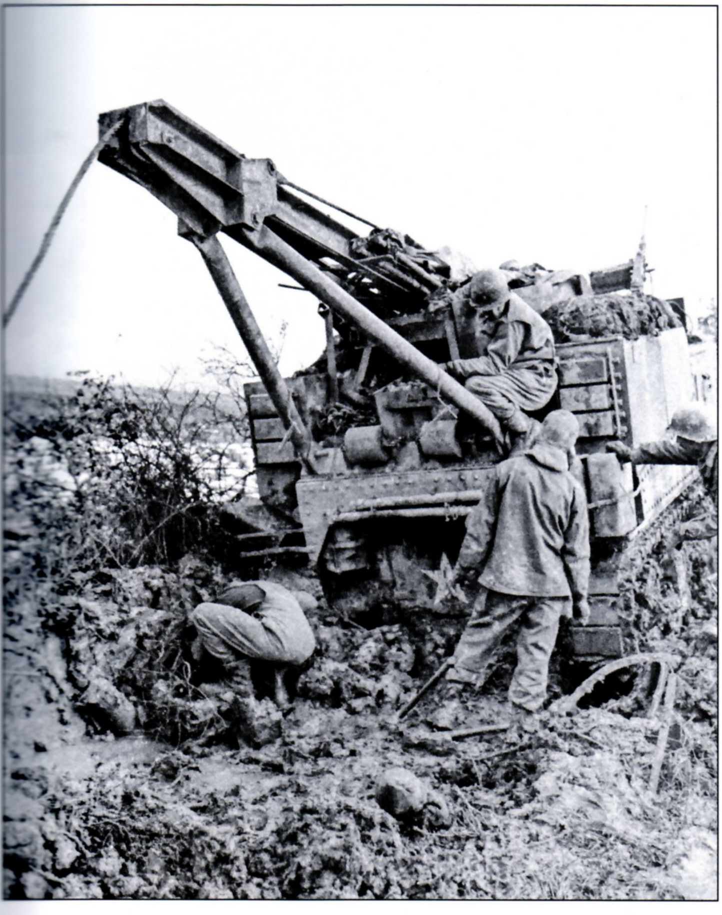
A pair of M31 TRVs are used to recover a bogged M4 tank near Beggendorf, Germany on 17 November 1944.



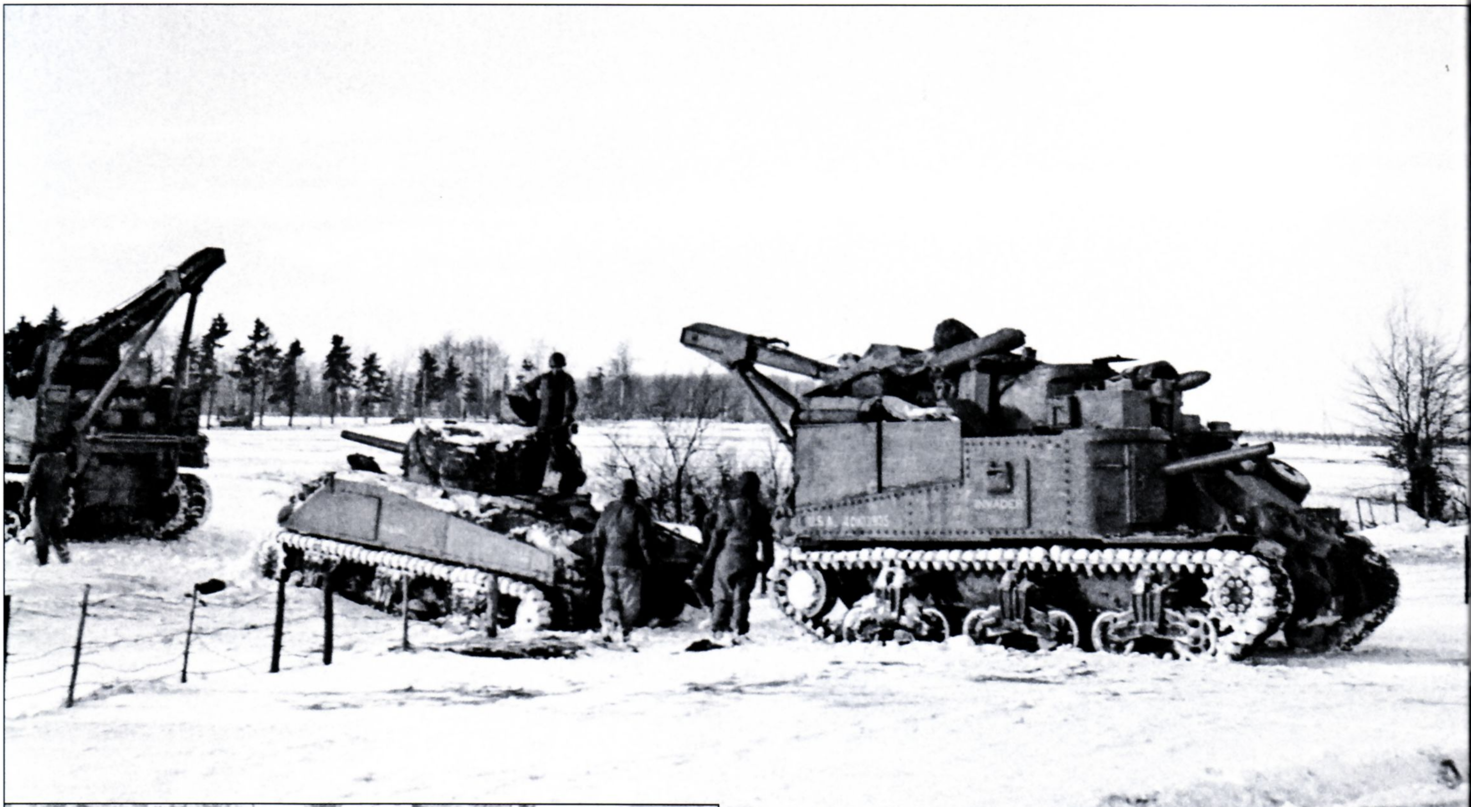
Another view of the two M31 of the 2nd Armored Division during operations near Beggendorf, Germany on 17 November 1944.



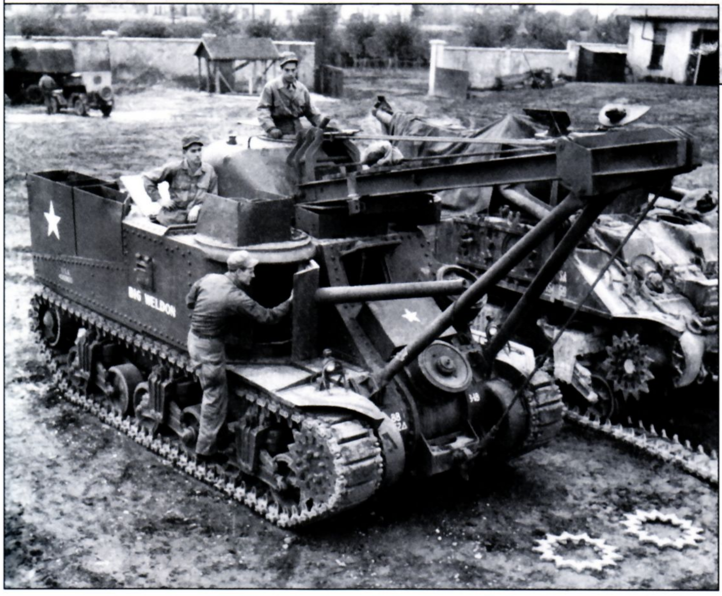
A welded-hull M31 of the 463rd Ordnance Battalion recovers a damaged M4 tank near Grosshau, Germany on 17 December 1944.



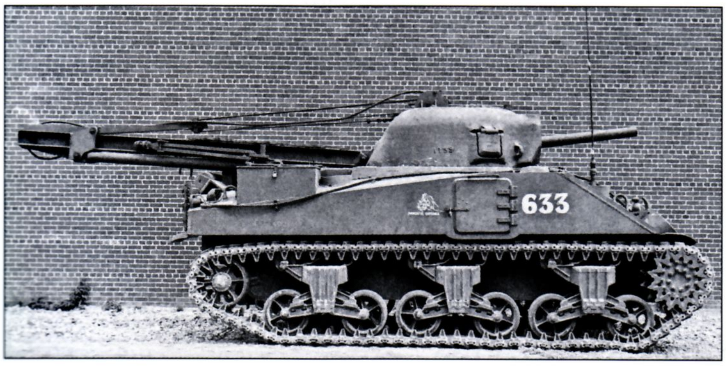
The crew of a M31 of the 6th Armored Division try to extract their bogged vehicle during operations near Luppy, France on 17 November 1944.



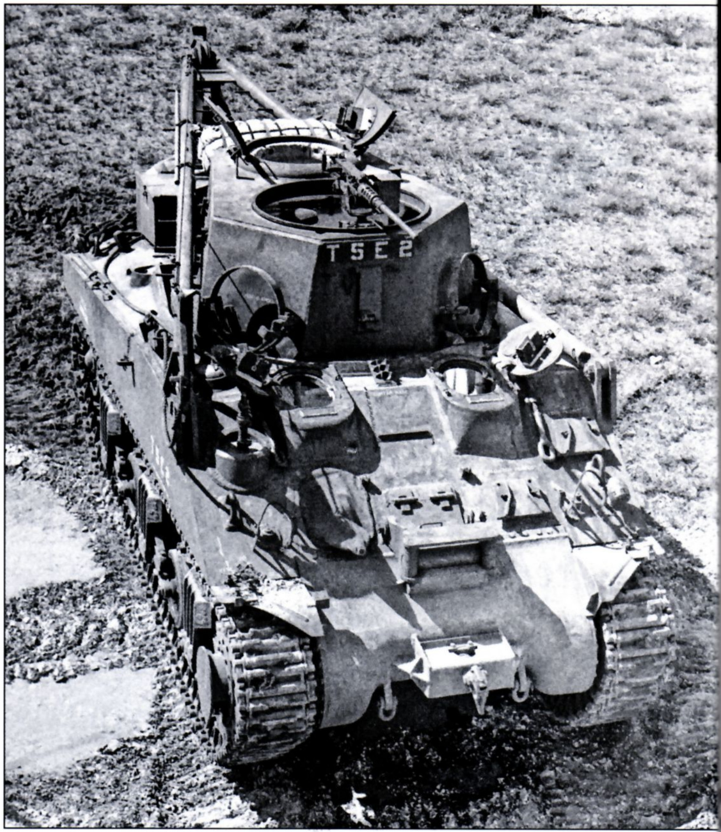
A pair of M31 from 3/66th Armored try to extract a bogged M4 of th 2nd Armored Division near Les Tailles, Belgium on 14 January 1945 durin the Battle of the Bulge. The M31 nearest the camera is "Invader" shown i another photo here.



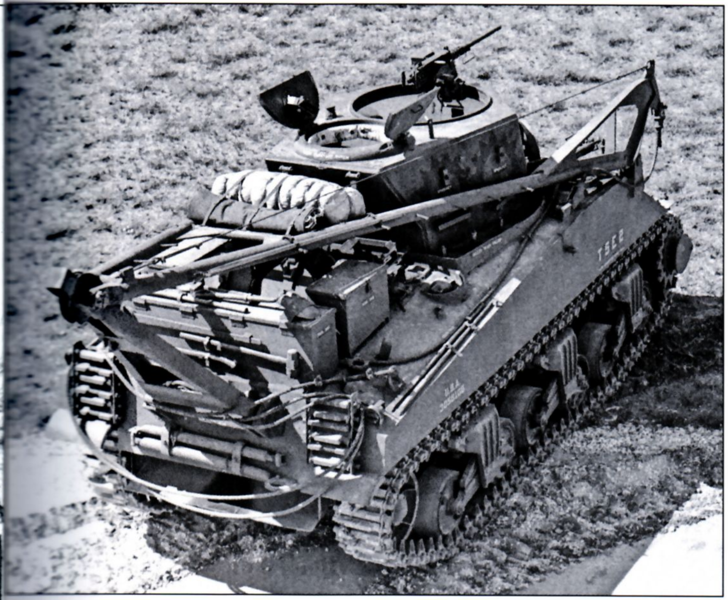
"Big Weldon", a M31 of Company B, 752nd Tank Battalion in Udine, Italy after the end of the war with a M32 TRV behind it. This gives a good view of how the 75mm hull gun was replaced by a door and dummy gun.



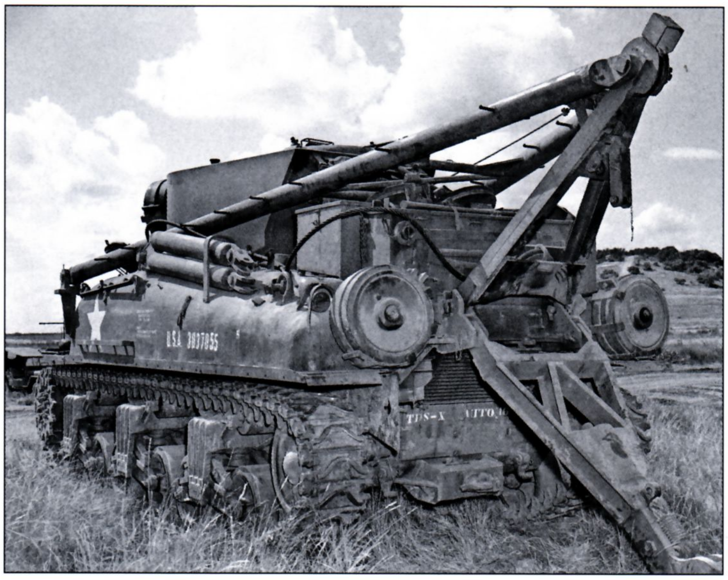
The T7 TRV was the losing competitor in the design of a M4 based tank recovery vehicle. As can be seen here with the pilot named "Powerful Katrinka", the T7 configuration was similar to the earlier T2/M31 with a crane mounted on the turret in place of the main gun, and a dummy gun mounted on the rear of the turret.



The pilots and some early production M32 used a welded plate turre instead of the more common formed plate turret of the standard productio vehicles. This is one of the pilots of the T5E2.



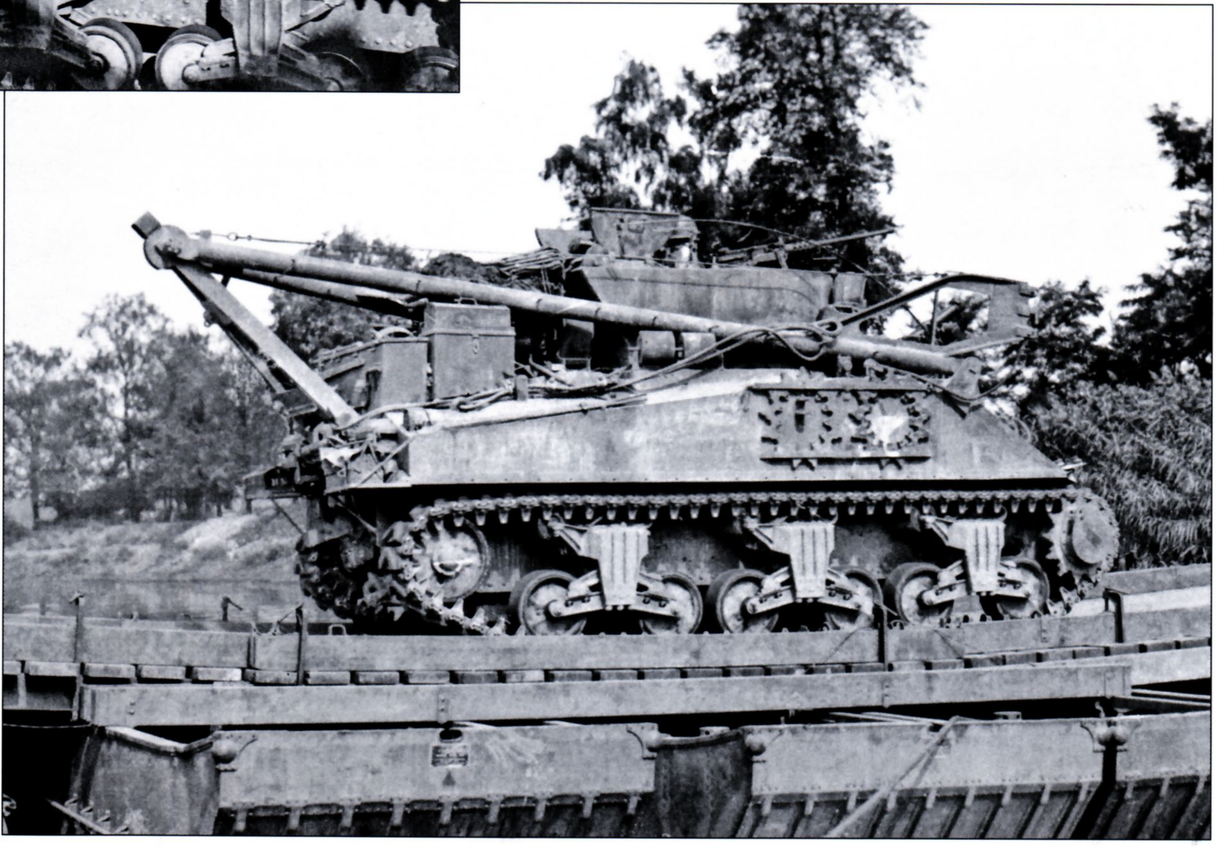
A useful detail view of the stowage arrangement on the T5E2 pilot, the version later designated as M32B2.



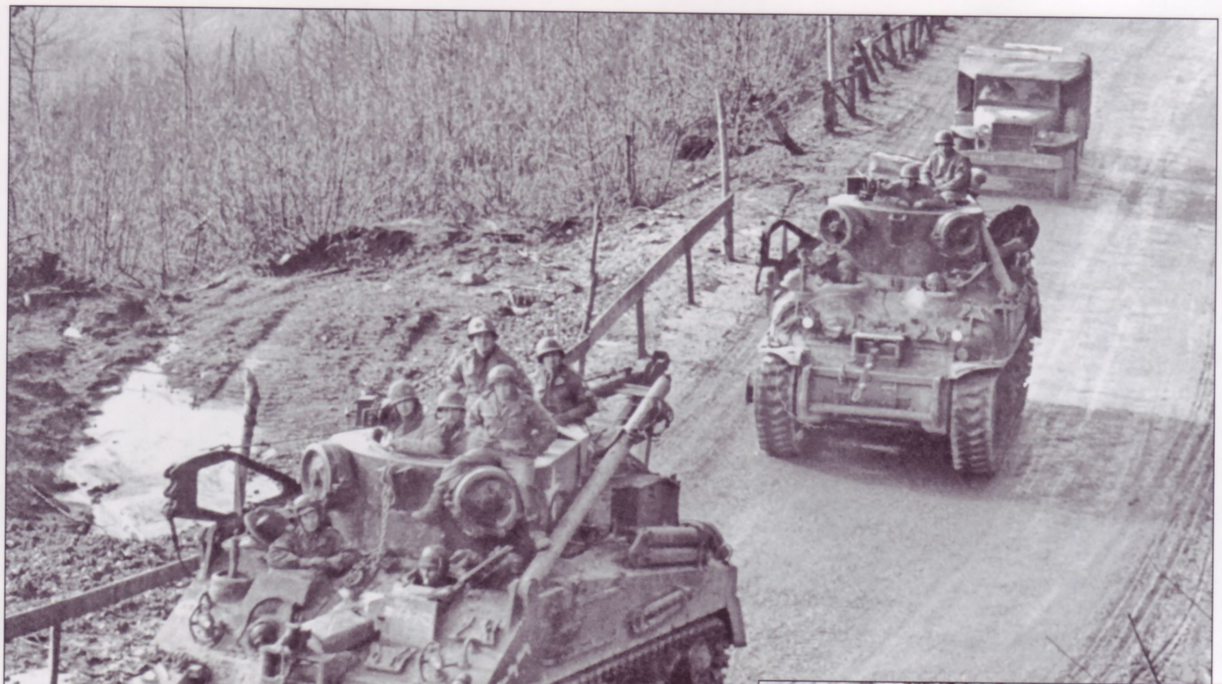
A useful detail view of a late production M32B1 of the Tank Destroyer School at Ft. Hood, Texas showing the configuration of the extended tow hook fitted below the A-frame travel lock for the crane.

SHOOT SIX BITS

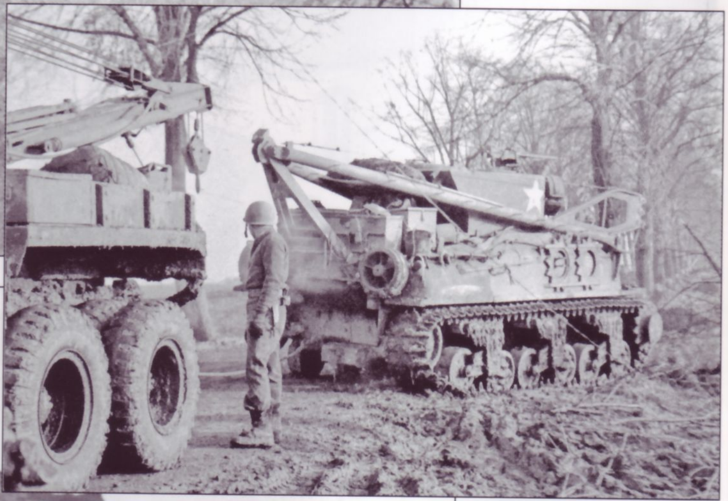
A M32B1 named "Shoot Six Bits" exits from the Utah Beach area in Normandy in June 1944, one of the first M32 TRVs on French soil.



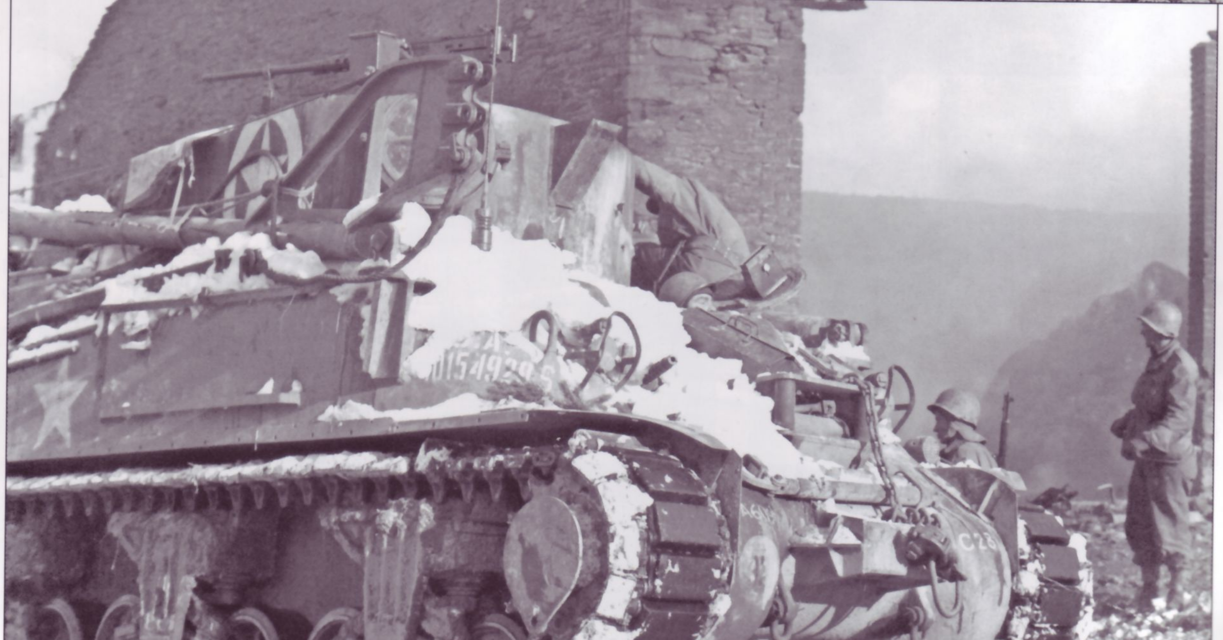
A M32 TRV of Patton's Third Army crosses the Moselle river over a pontoon bridge on 13 September 1944.



A M32 followed by a M32B1 on a road in the Apennine mountains of Italy on 9 December 1944. Both appear to be fitted with attachment harnesses for treadway bridges.

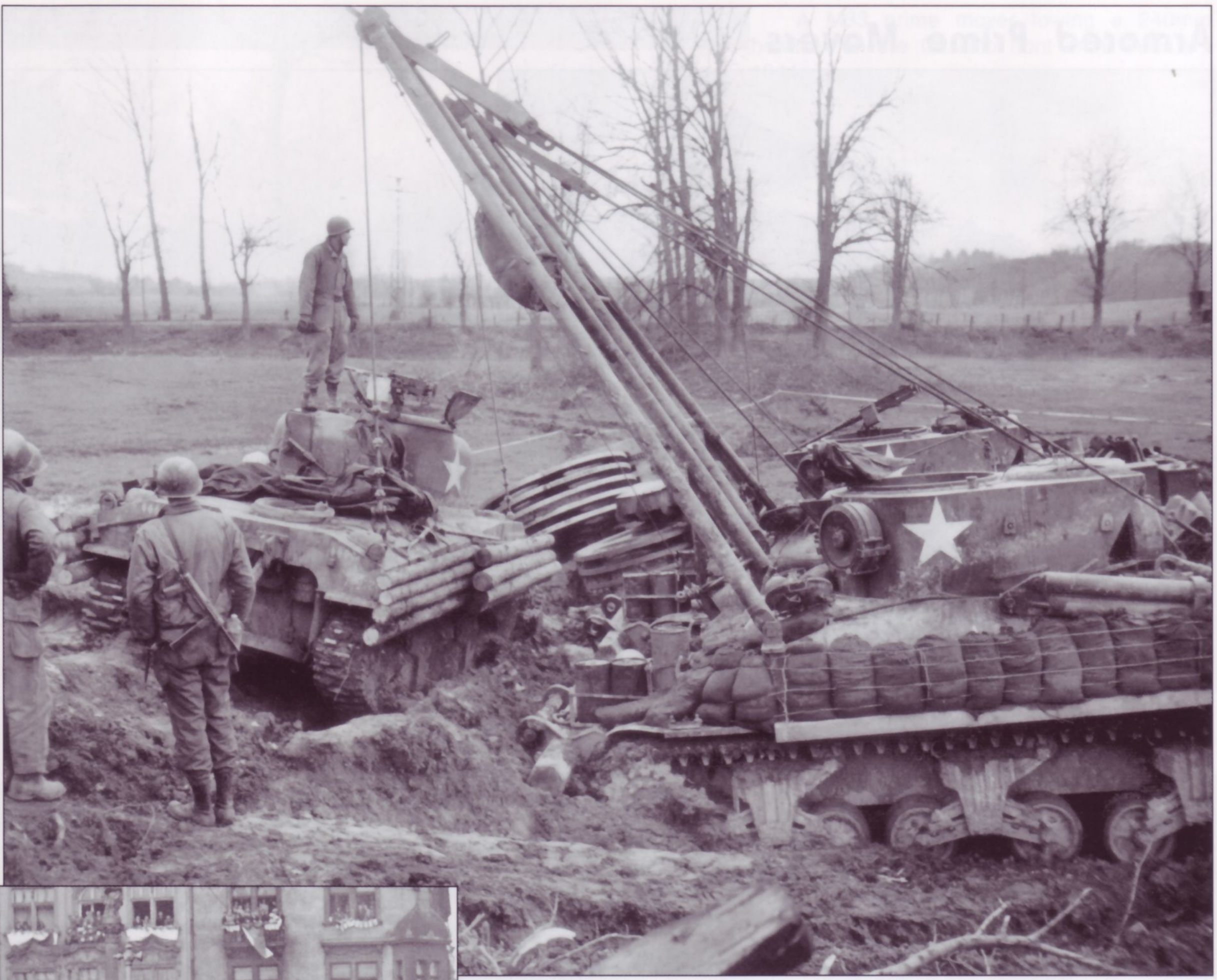


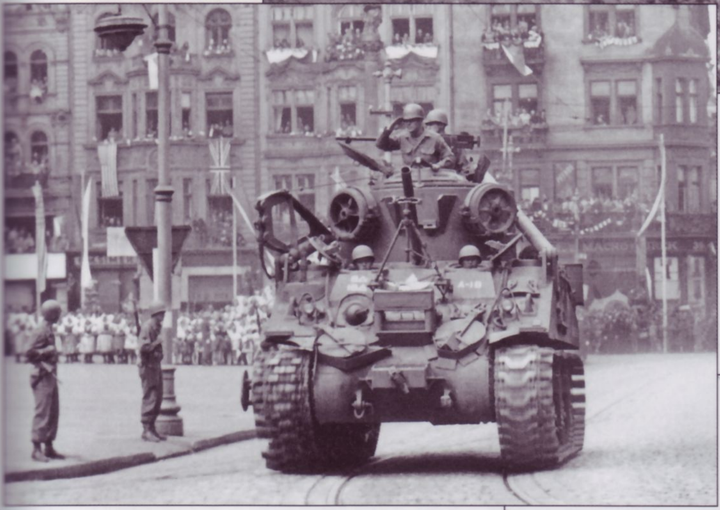
A wrecker truck is used to recover a M32B1 of the 771st Tank Battalion which has lost a track near Immendorf, Germany on 14 December 1944.



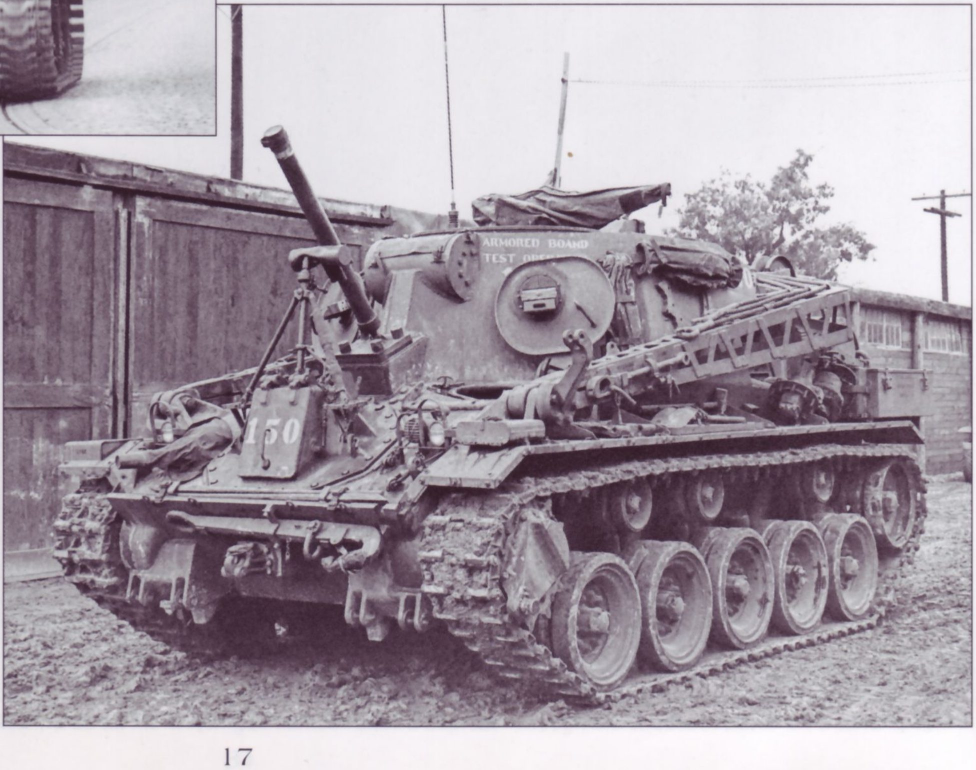
A M32B1 of Co. C, 603rd Tank Destroyer Battalion attached at the time to the 6th Armored Division is seen in operation near Bastogne on 14 January 1945 during the Battle of the Bulge.

A M32B1 tank recovery vehicle tries to help extricate a T1E3 mine roller of the 739th Tank Battalion that has become bogged down while conducting mine clearance operations for the 30th Infantry Division on 19 December 1944. The M4 tank has a section of corduroy matting on the hull side to help extract it from the mud, a technique that was inadequate this time.

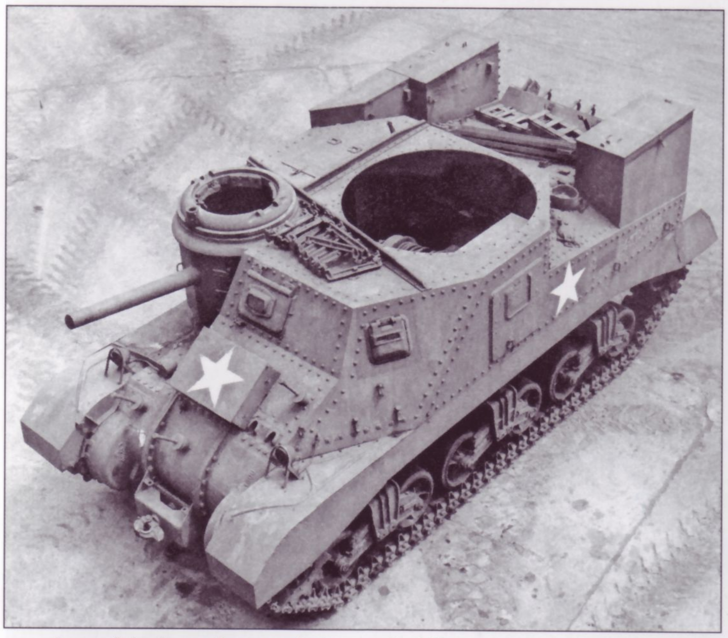




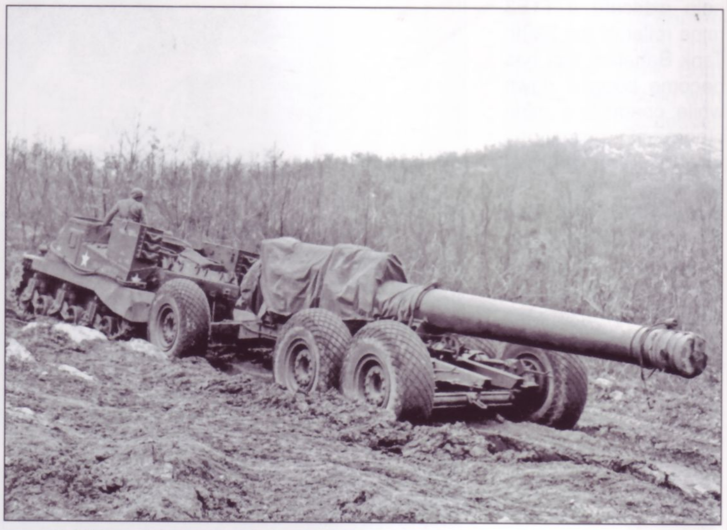
A M32B3 of the 18th Tank Battalion, 8th Armored Division is seen here on parade in Plzen, Czechoslovakia during a 4th of July parade in 1945.



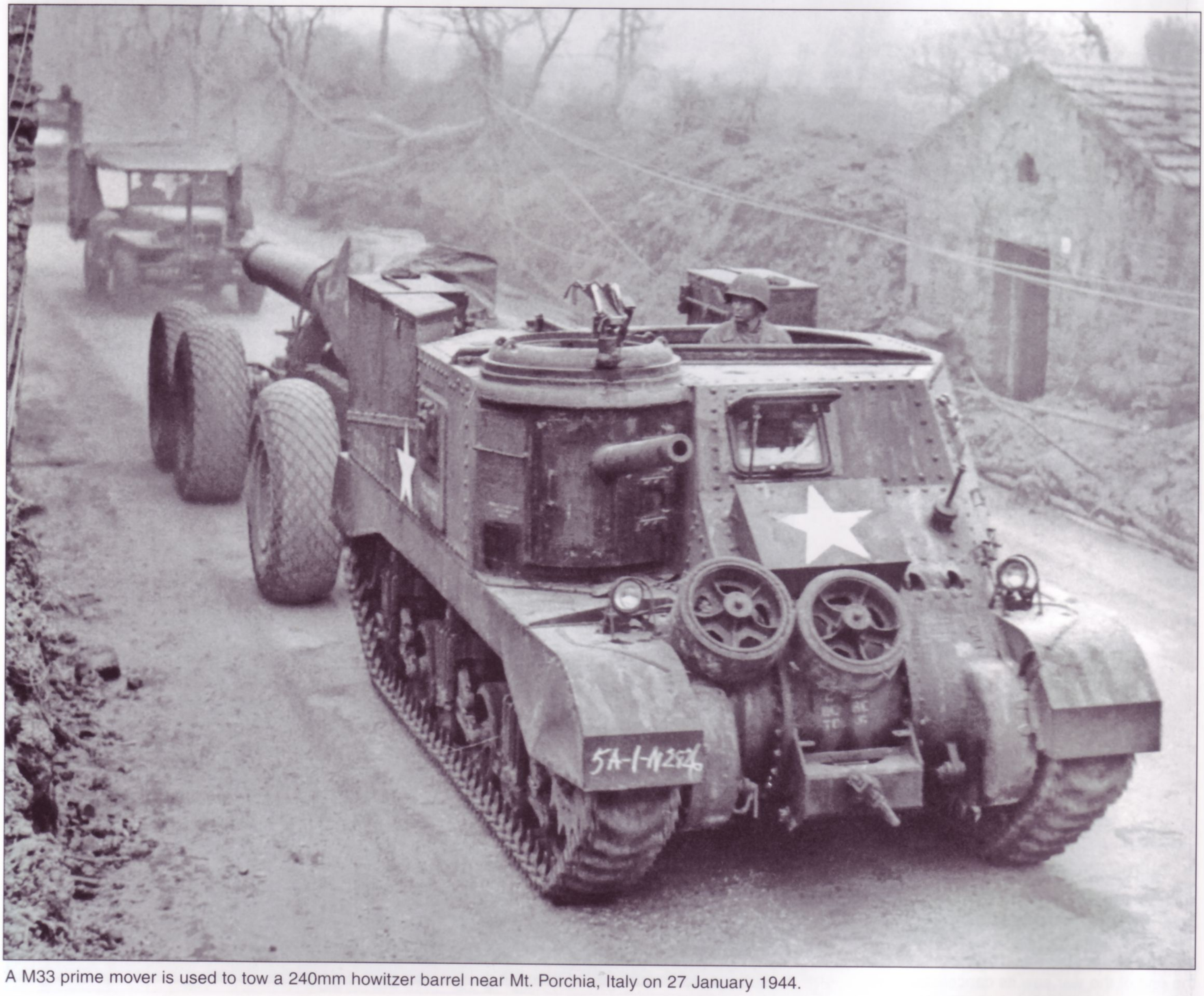
Although light tank battalions were supposed to receive light tank recovery vehicles, none entered serial production prior to the end of the war. A light recovery version of the M24 tank, the T6E1 was tested in 1945 as seen here, but the end of the war saw its cancellation.



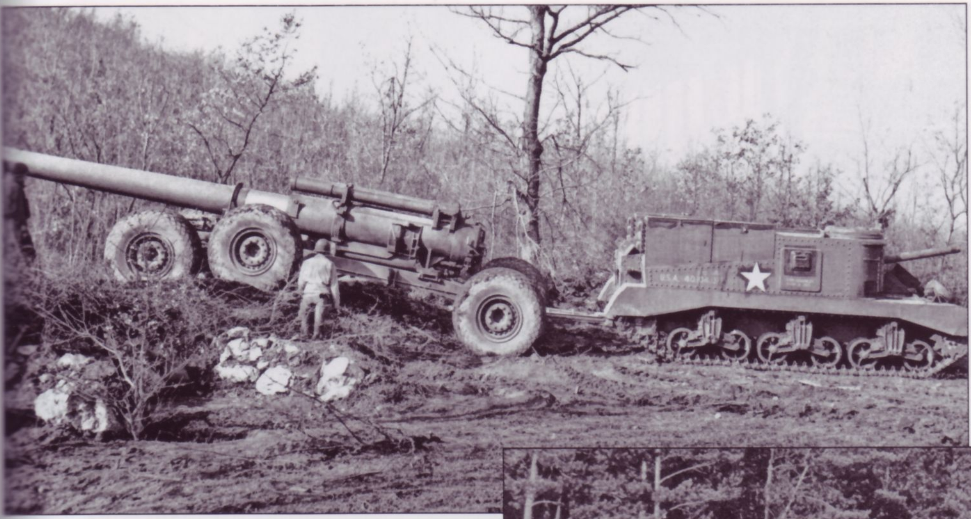
A useful view of one of the early M33 prime movers shows its relationship to the M31 TRV, including the characteristic rear stowage bins.



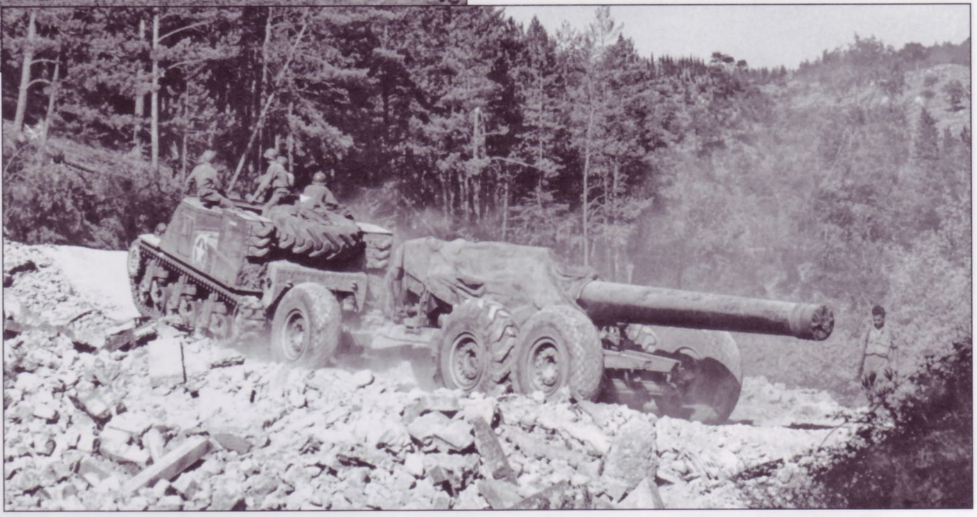
A M33 prime mover tows a 240mm howitzer tube near Mount Porchia in the Cassino sector on 27 January 1944.



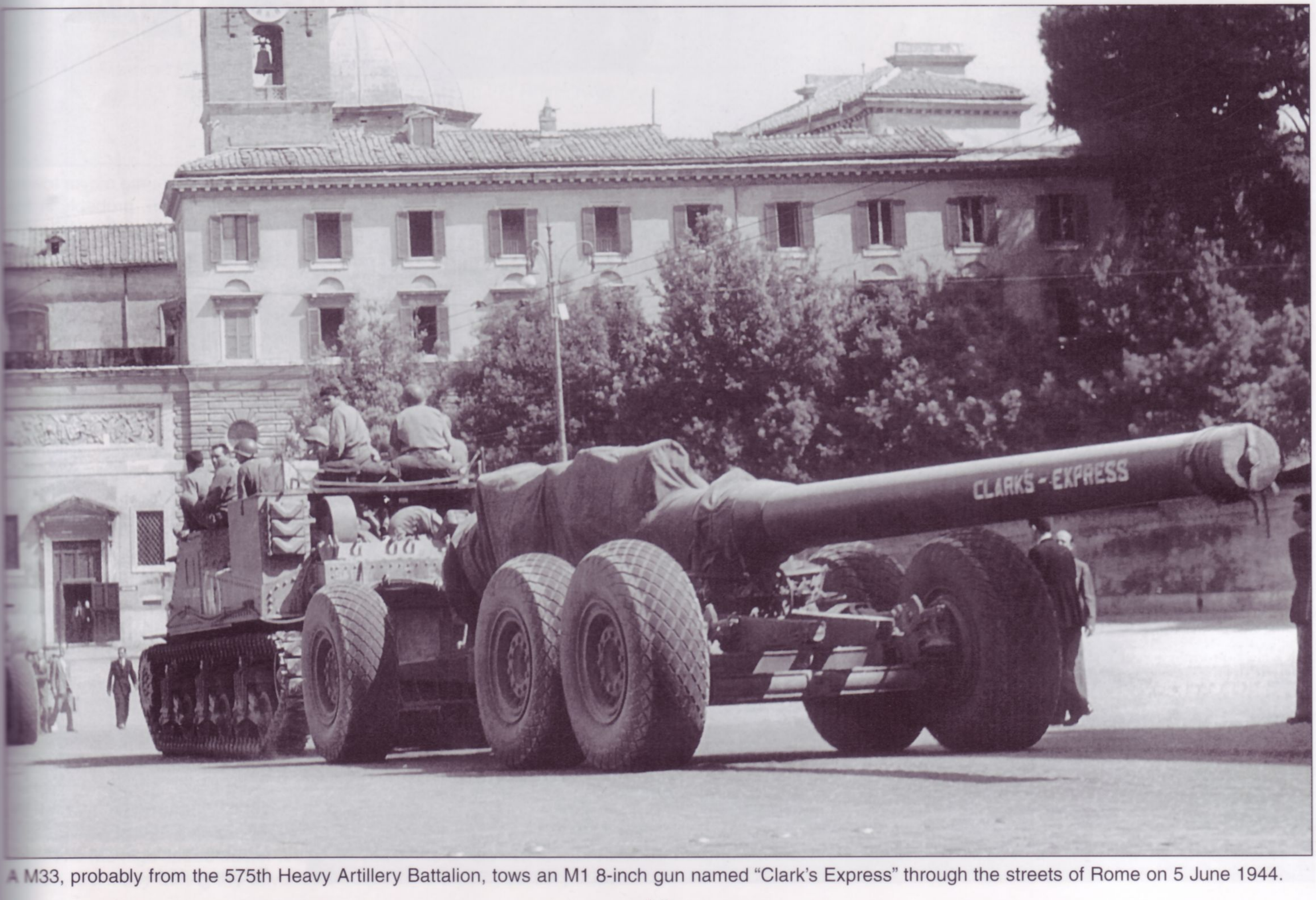
A M33 prime mover is used to tow a 240mm howitzer barrel near Mt. Porchia, Italy on 27 January 1944.



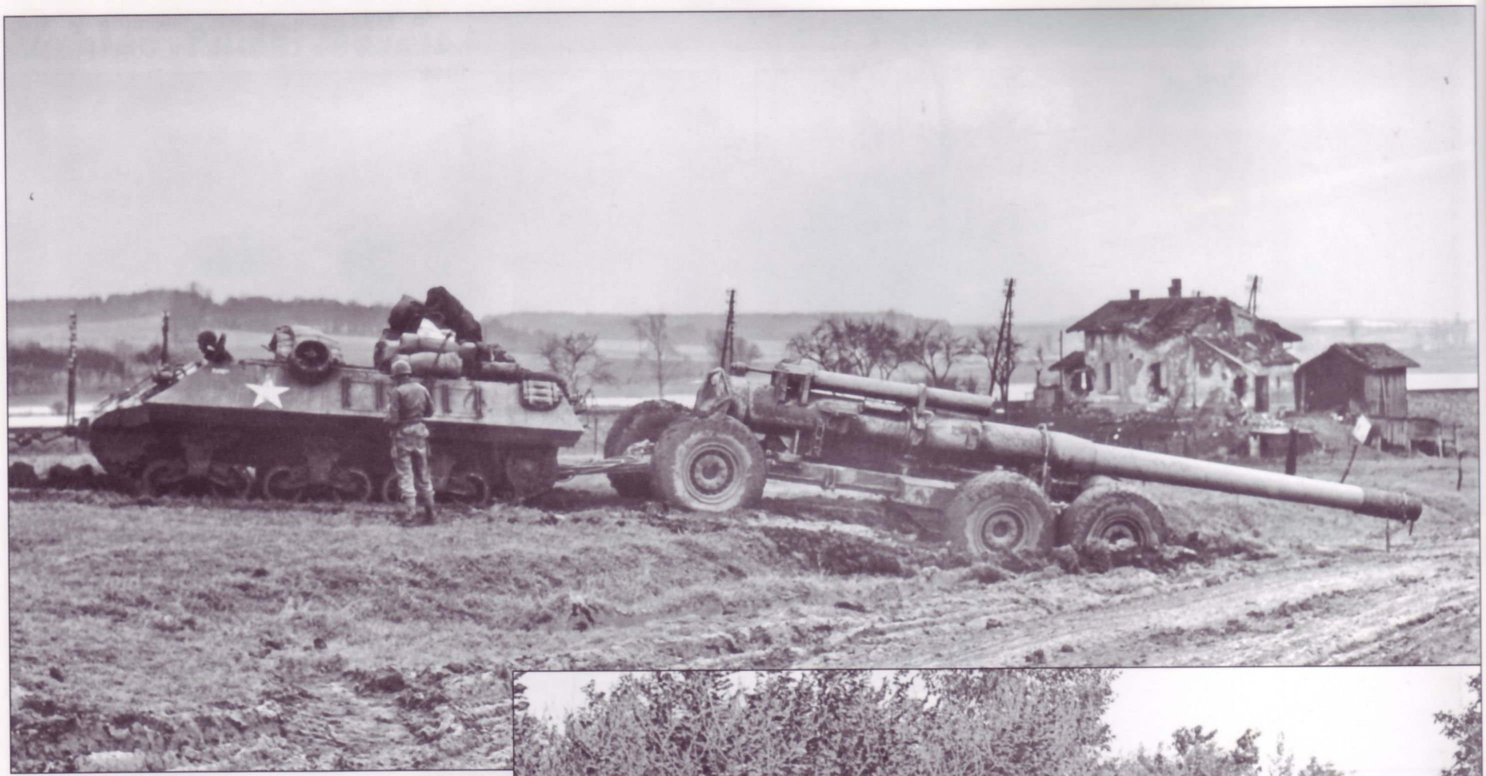
A M33 prime mover towing a 240mm howitzer on the Cassino front on 8 February 1944.



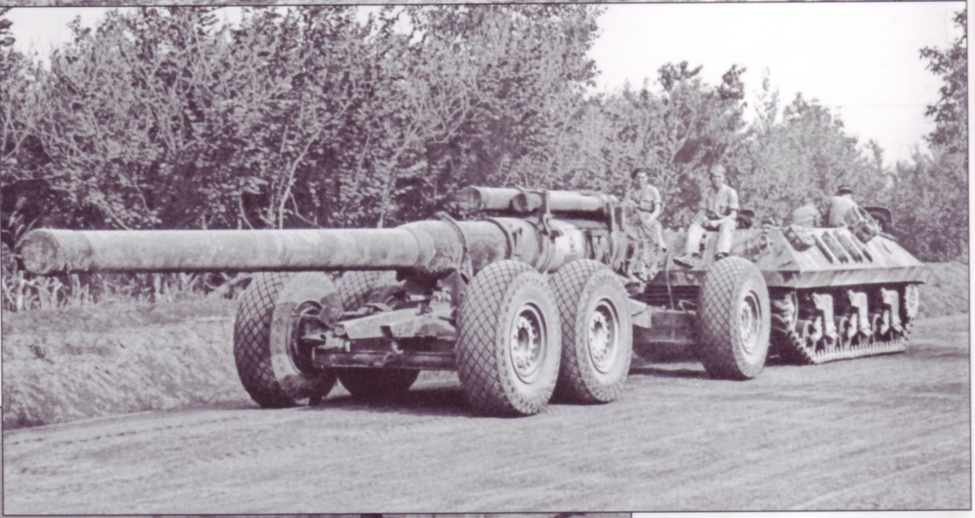
A M33 tows a 240mm gun assembly near aglia, Italy on 10 September 1944.



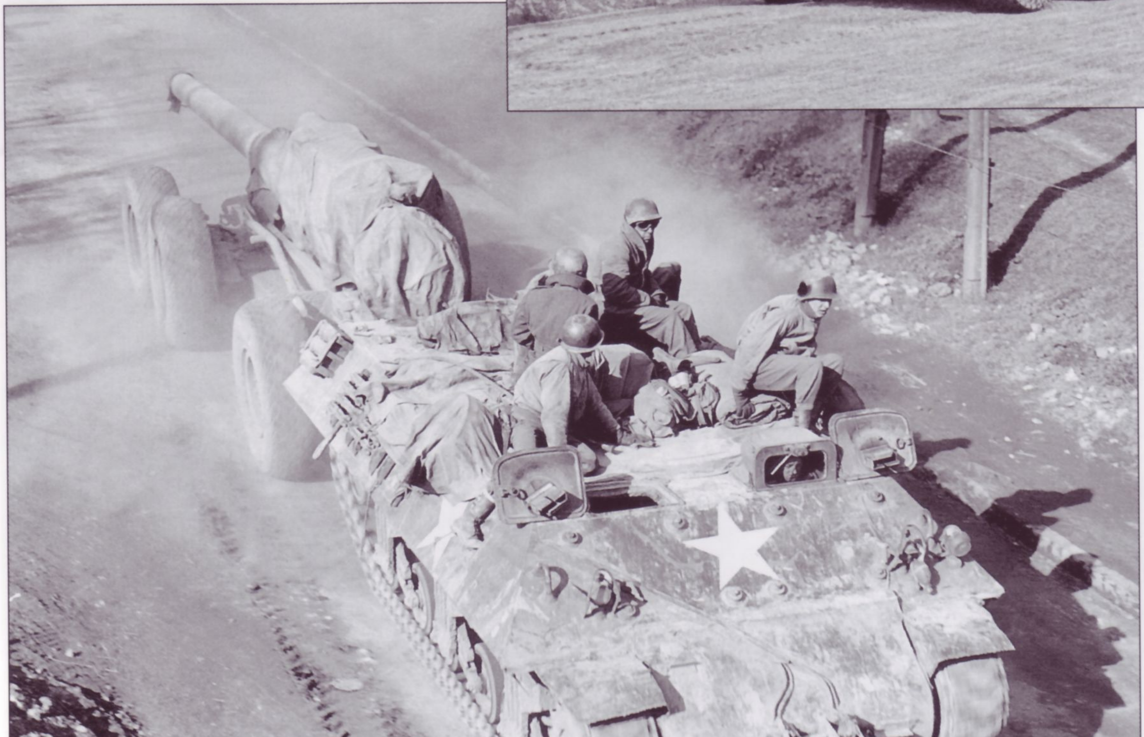
M33, probably from the 575th Heavy Artillery Battalion, tows an M1 8-inch gun named "Clark's Express" through the streets of Rome on 5 June 1944.



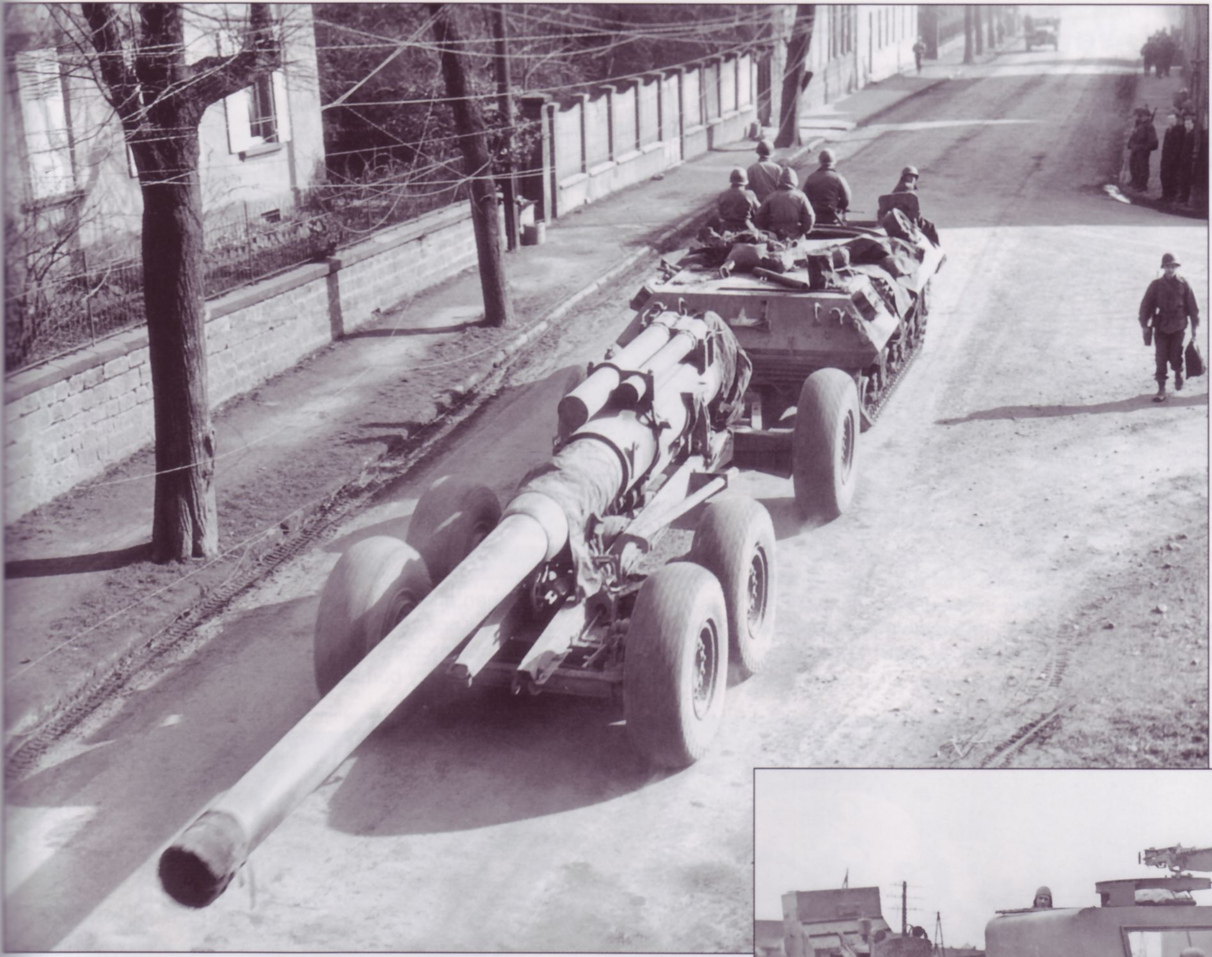
A M35 prime mover towing the cannon of an 8-inch gun. This heavy artillery weapon had to be broken down into multiple loads for towing with the cannon tube and recuperator assembly separate from the carriage.



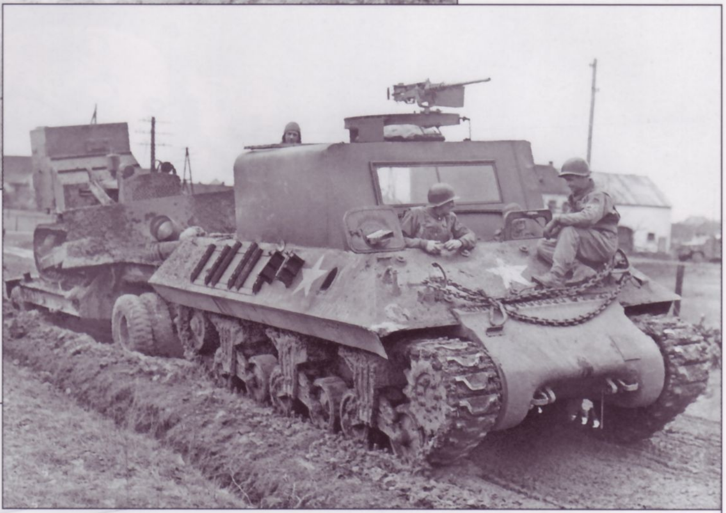
A M35 prime mover towing an 8-inch gun, probably in the Italian theater.



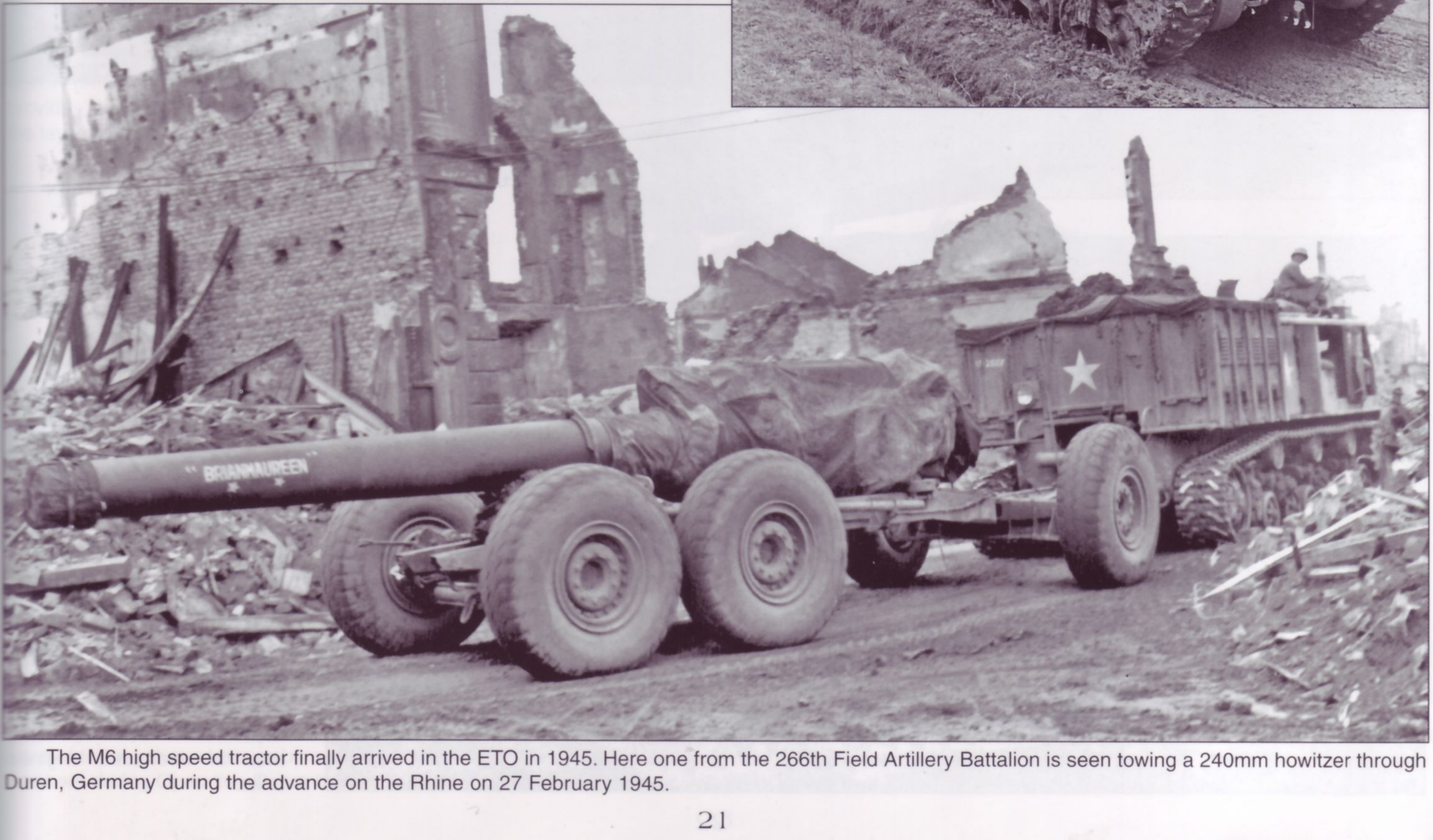
A M35 prime mover of the 575th Field Artillery Battalion, 35th Field Artillery Group is seen here towing the tube from a M1 8-inch gun near Monnenheim, France on 26 February 1945.



Another view of a M35 prime mover from the 575th Field Artillery Battalion in Monnenheim on 26 February 1945 from the rear provides a better view of the M1 8-inch gun. Due to the size of this weapon, the barrel and recoil assembly were towed separately from the carriage. Once in place, the barrel was moved on to the carriage using a M2 truck mounted crane.

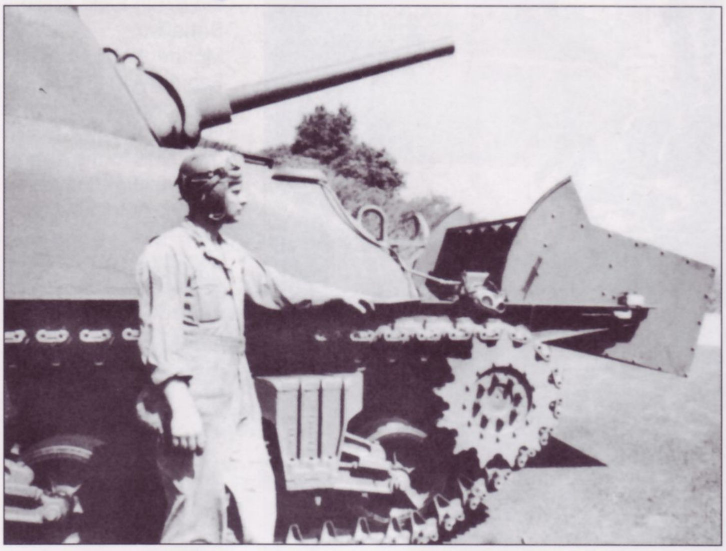


This M35 prime mover was modified in the field with the addition of a sheet metal weather cover complete with a jeep windshield. It is being used by the 4th Armored Division towing a trailer with an armored bulldozer near Kyll, Germany on 7 March 1945 during operations along the Rhine river.

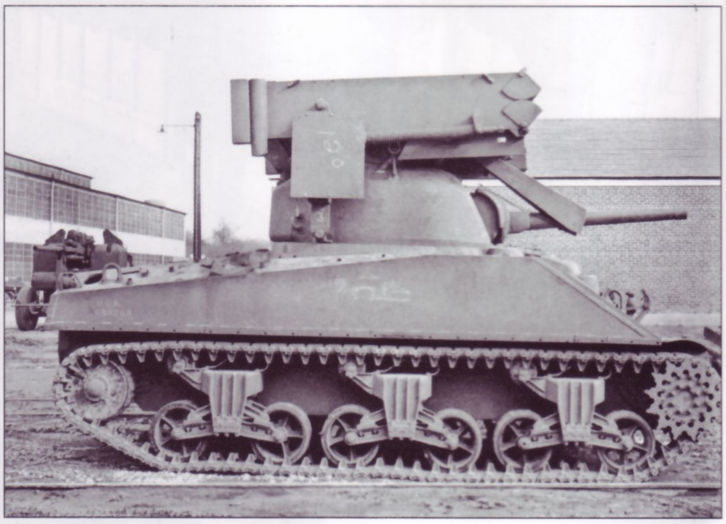


The M6 high speed tractor finally arrived in the ETO in 1945. Here one from the 266th Field Artillery Battalion is seen towing a 240mm howitzer through Duren, Germany during the advance on the Rhine on 27 February 1945.

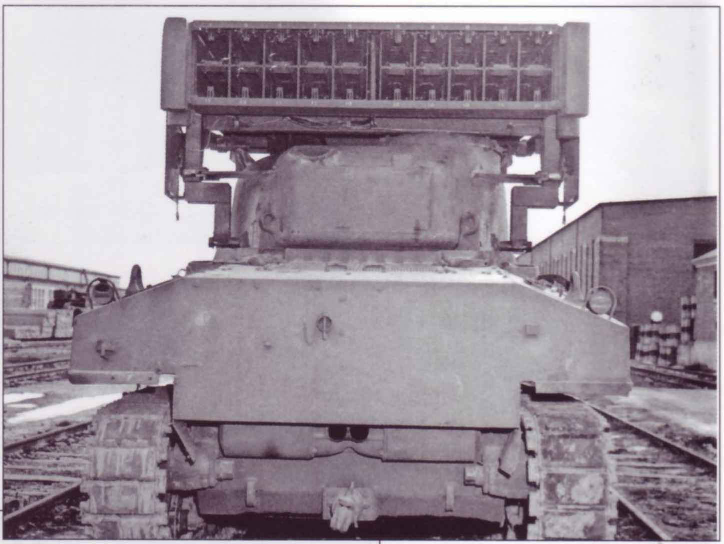
Combat Engineer Vehicles



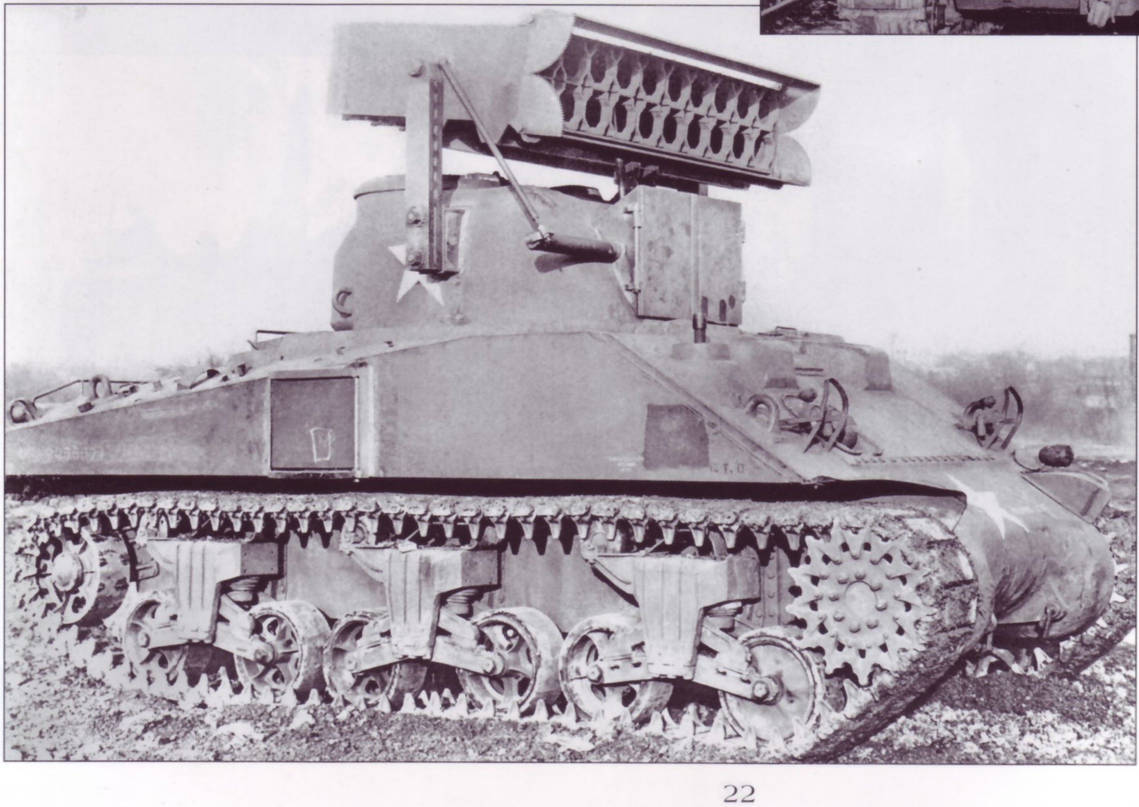
The first version of the 7.2 inch demolition rocket launcher was the Mark 5 Cowcatcher, fitted to the hull front of the tank as seen here during trials on a M4A1 tank.



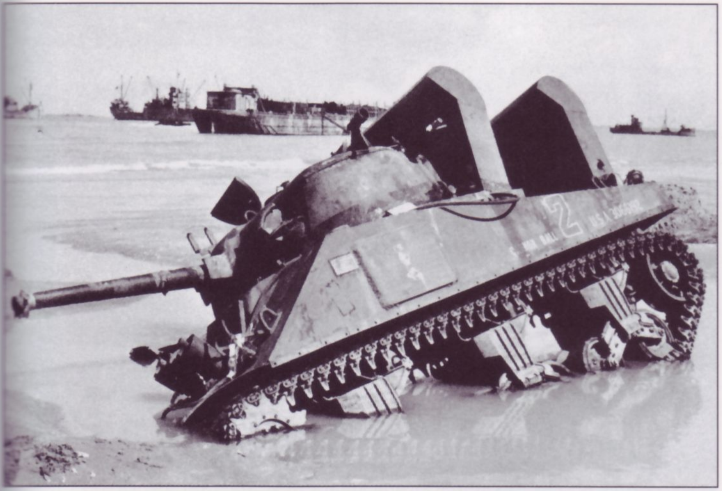
This M4A2 had been fitted with the T40 Whiz-Bang demolition rocket launcher for trials at Ft. Knox. The intended role for this weapon was the elimination of beach obstructions as its short range did not make it particularly useful as an artillery bombardment rocket.



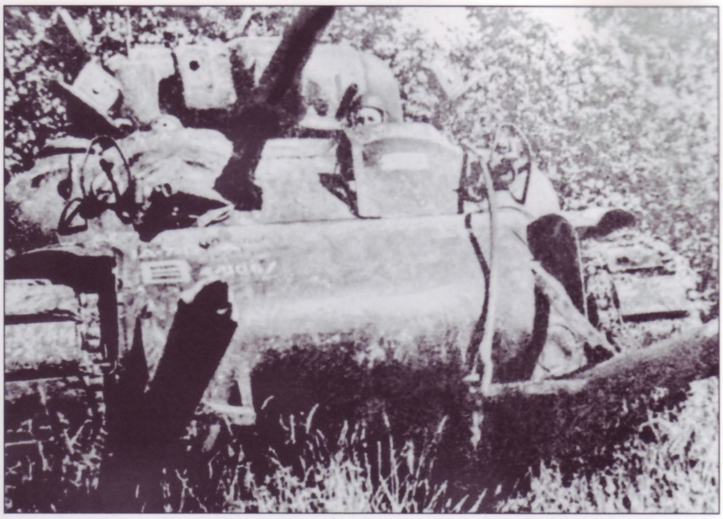
This rear view provides details of the T40 Whiz-Bang launcher on a M4A2 pilot. As can be seen the clearance between the launcher rack and the turret roof made it impossible to use the turret hatches.



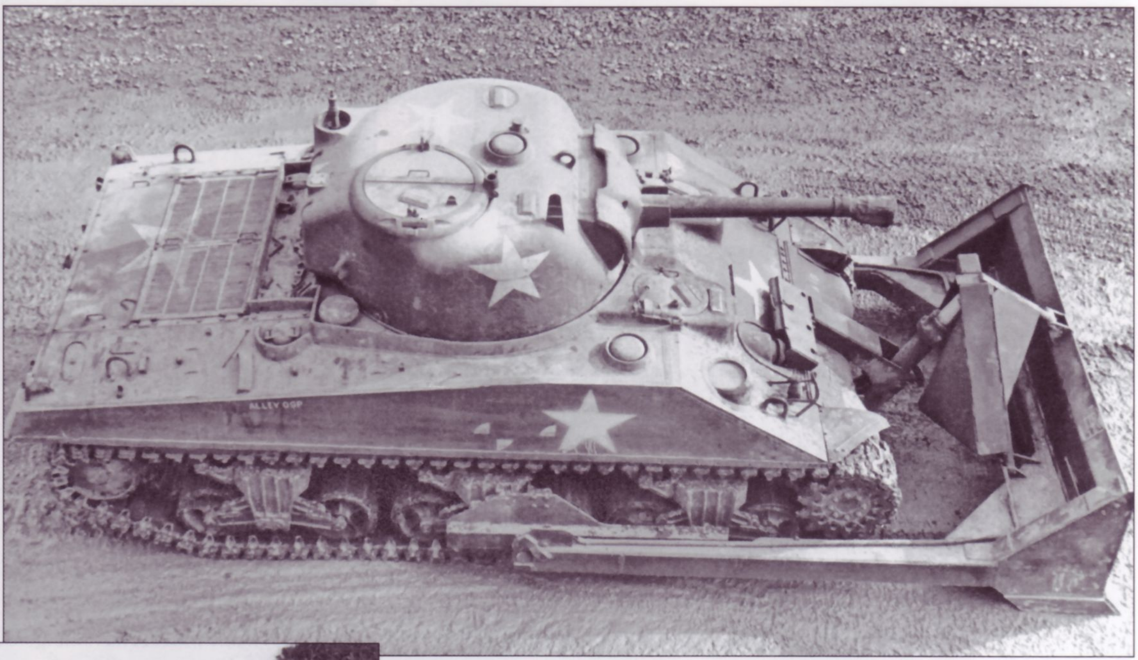
The Mark 5 was followed by the overhead Mark 6 (T2) launcher intended to arm the Engineer Armored Vehicle seen here on the M4A3 pilot during trials in 1943. Lack of support for the EAV program led to the decision to shift the demolition rocket launcher to normal M4 tanks in the separate tank battalions rather than in dedicated engineer units.



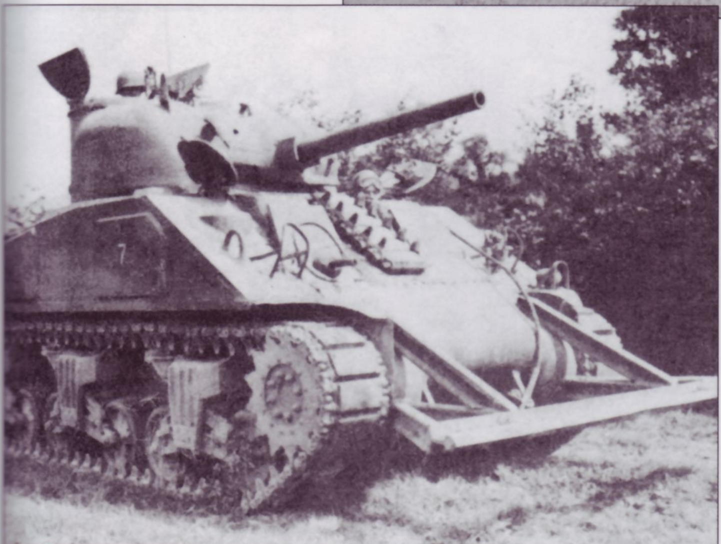
Although this photo of "Cannonball" from Company C, 70th Tank Battalion at Utah Beach is well known, it's seldom been appreciated that this tank was one of those fitted with the T40 Whiz-Bang rocket launcher for use in attacking the German beach obstructions. The mounting for the launcher assembly can be seen on the turret side, and the sight can be seen in front of the commander's hatch. Trials of the Whiz-Bang in England prior to D-Day were not very successful so the launcher was removed from the tanks prior to landing.



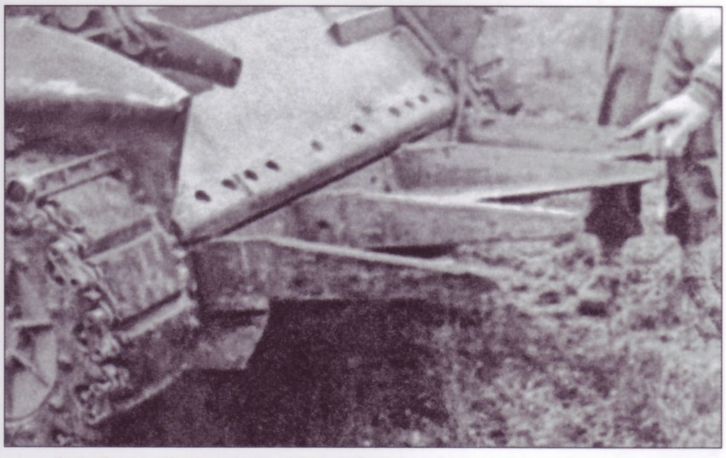
A shortage of dozer tanks led to a variety of improvisations to break through the bocage. Among the first methods was the "Salad Fork" developed by the 747th Tank Battalion. The two timber prongs on the front of the tank were used to punch deep holes in the base of the bocage into which engineers accompanying the tanks would place explosive charges to breach the hedgerow. Although successfully used in combat on a small scale, the tactic required the use of too much high explosive to be practical.



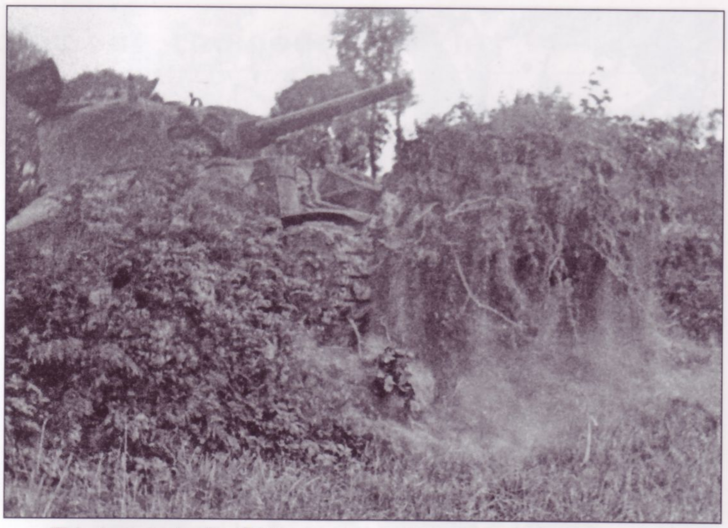
This overhead view of a M4A2 of the 777th Tank Battalion fitted with the M1 dozer for trials at Ft. Knox provides a good illustration of the layout of this system.



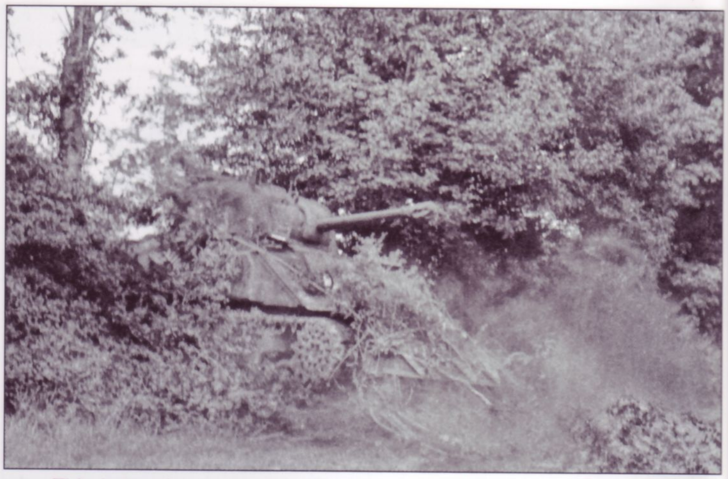
The Green Dozer, also developed by the 747th Tank Battalion, was an attempt to breach the bocage by non-explosive means. It was used in small numbers during Operation Cobra by the 709th and 747th Tank Battalions.



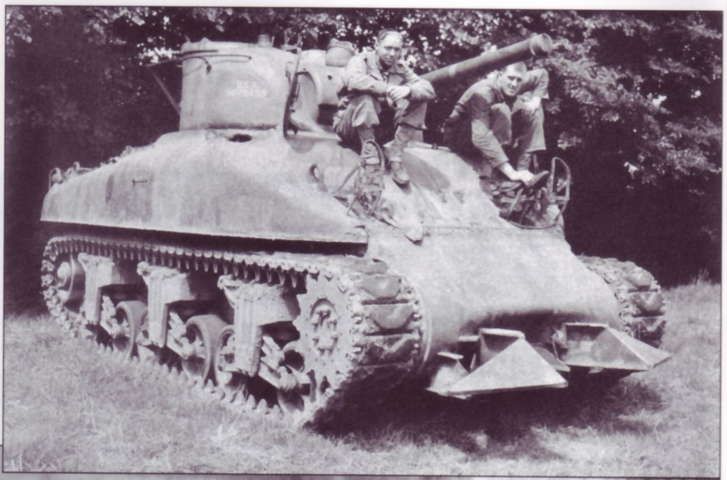
Sgt. Curtis Culin of the 102nd Cavalry Squadron designed a bocage cutter using scrap steel from German beach defenses and this photo shows his original design mounted on a M5A1 from his unit. This was the basis for the Rhino bocage cutter mass produced by army ordnance units in France for Operation Cobra in July 1944.



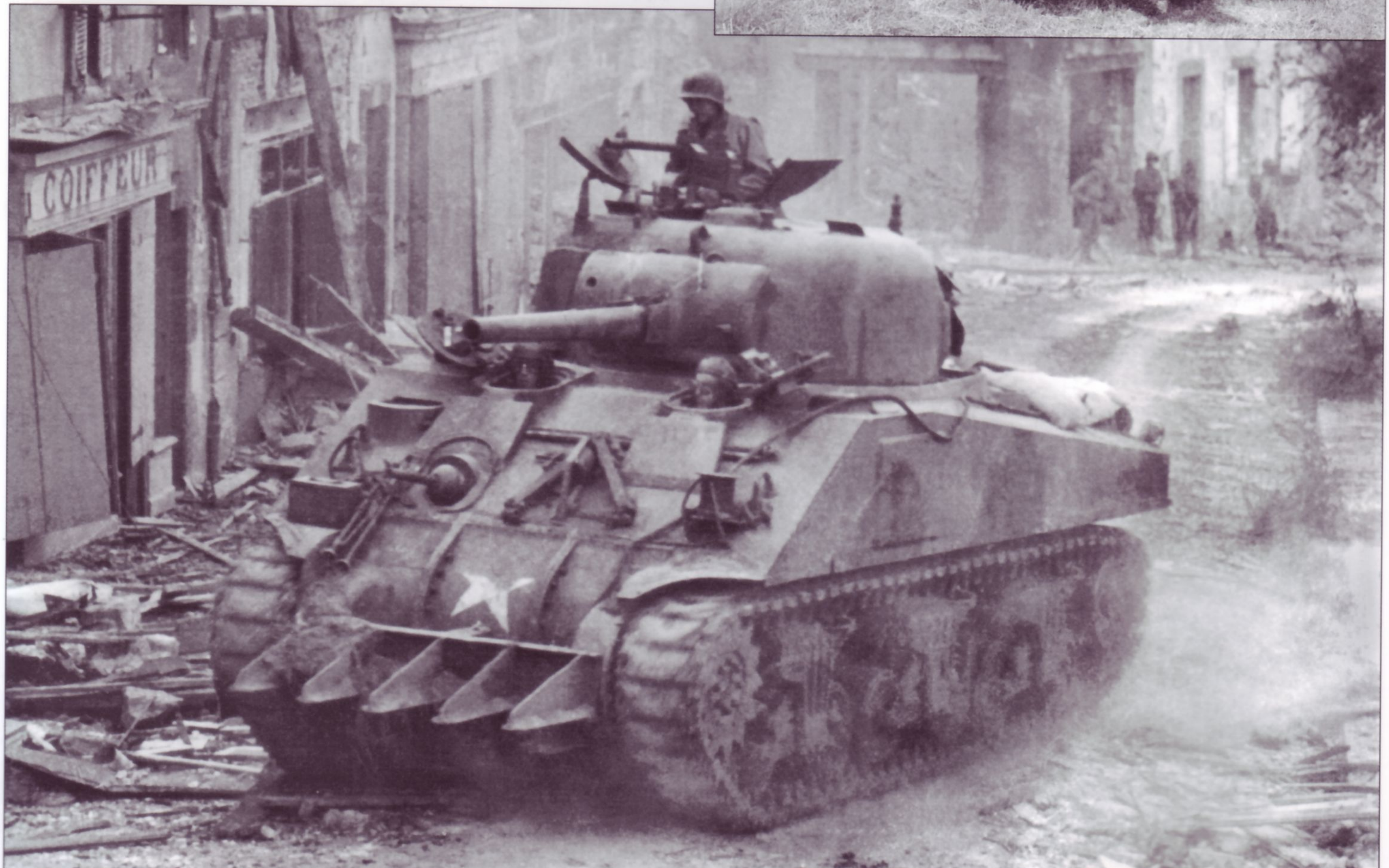
This is a test of a Rhino against a hedgerow in Normandy prior to Operation Cobra.



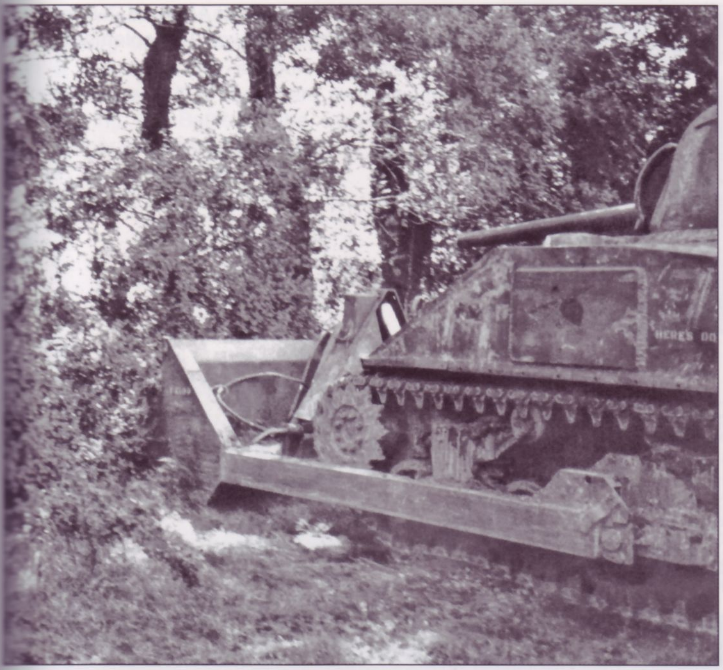
This is another example of the effect of a M4 with the Rhino pushing through the bocage.



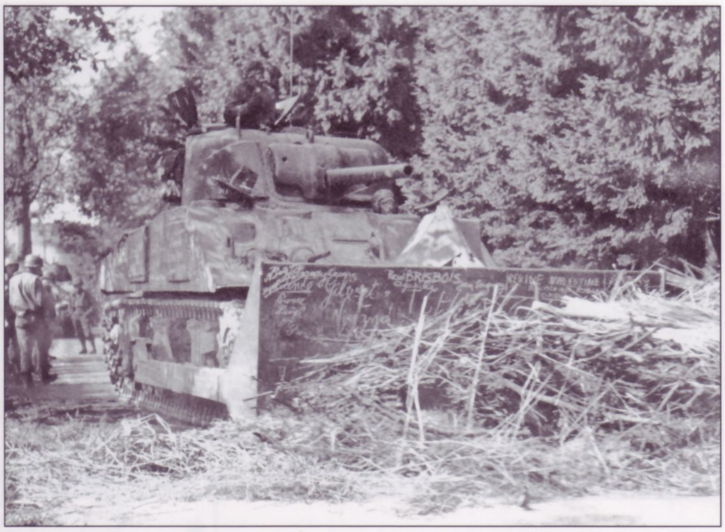
The 3rd Armored Division developed a somewhat different device called the T2 Douglas device which had triangle prongs. It is seen here fitted on a M4A1 DD amphibious tank which has had its floatation equipment removed.



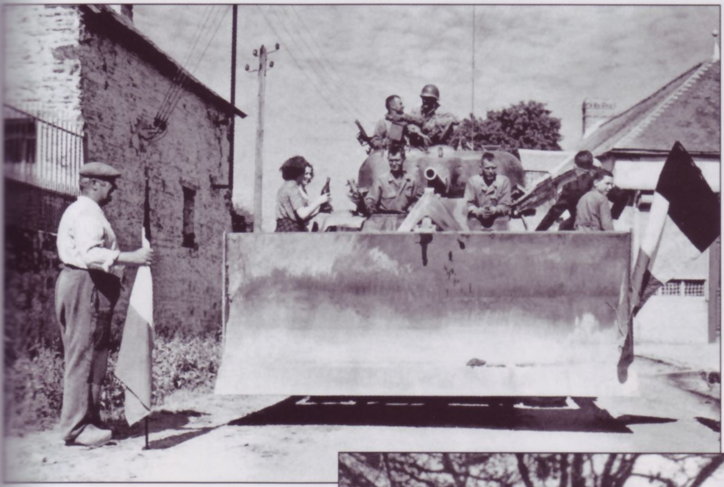
The Culin hedgerow cutters were still seen for months after Operation Cobra. This M4 tank with a T1 Rhino is seen in Lambezelec on the outskirts of the seaport of Brest in August 1944.



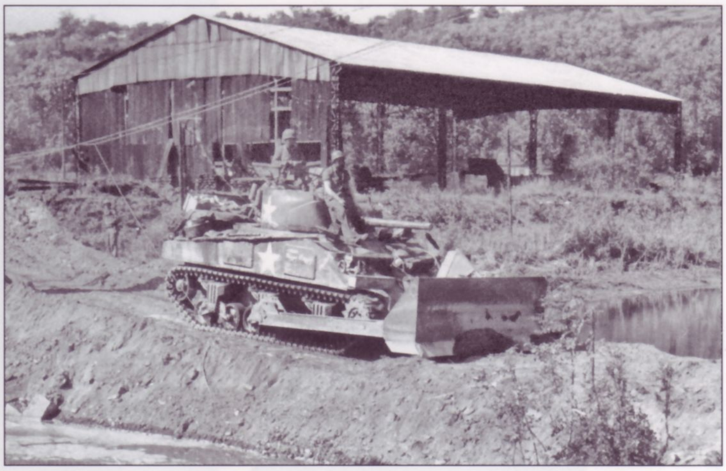
Although the Culin hedgerow cutter is better known for its role in bocage busting, the M1 dozer was also widely used during Operation Cobra. A close-up of the 70th Tank Battalion dozer tank named "Here's Dots Mom" is seen pushing through hedgerow.



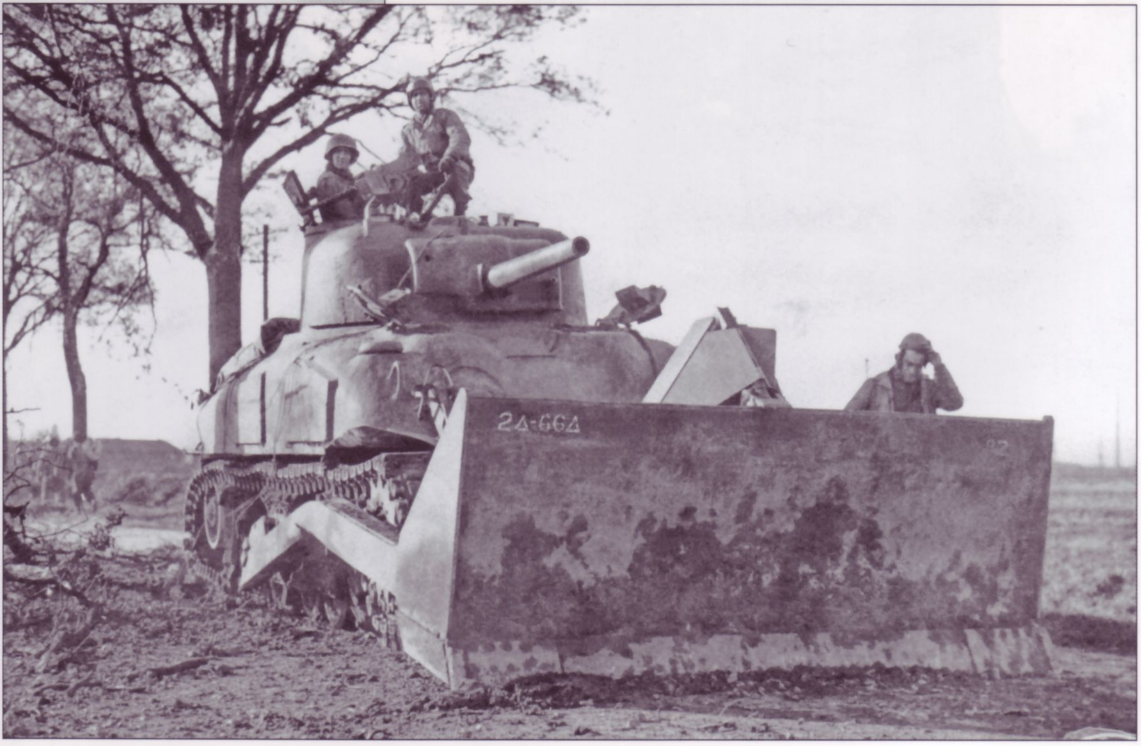
A M4 with M1 dozer is seen clearing a road near Harze, Belgium on 10 September 1944. Belgian citizens have chalked their names and greetings all over the tank, a popular activity during the liberation of Belgium by Allied forces in September 1944.



French civilians in the town of Chavisne, France welcome the crew of a M4 tank with M1 dozer of the 3rd Armored Division on 13 August 1944.

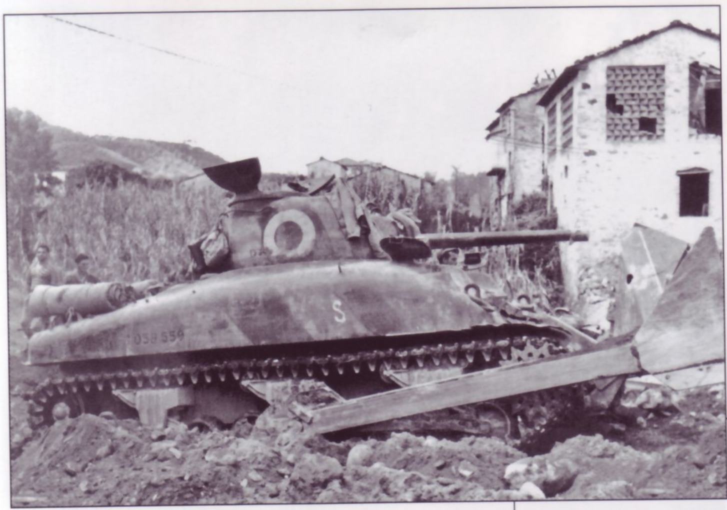


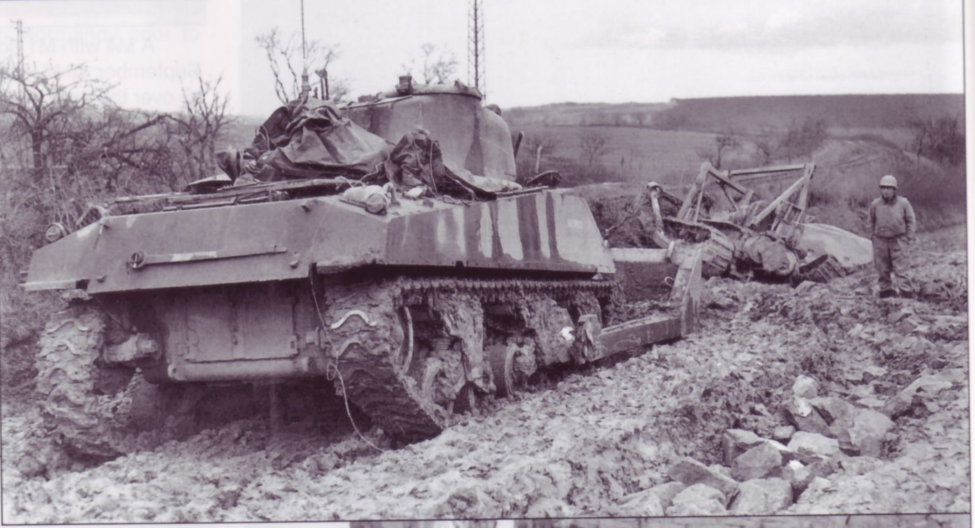
A M4 dozer tank is used to create a roadway across a narrow tributary of the Moselle river on 12 September 1944 following the main river crossing by Patton's Third Army near Dieulouard.



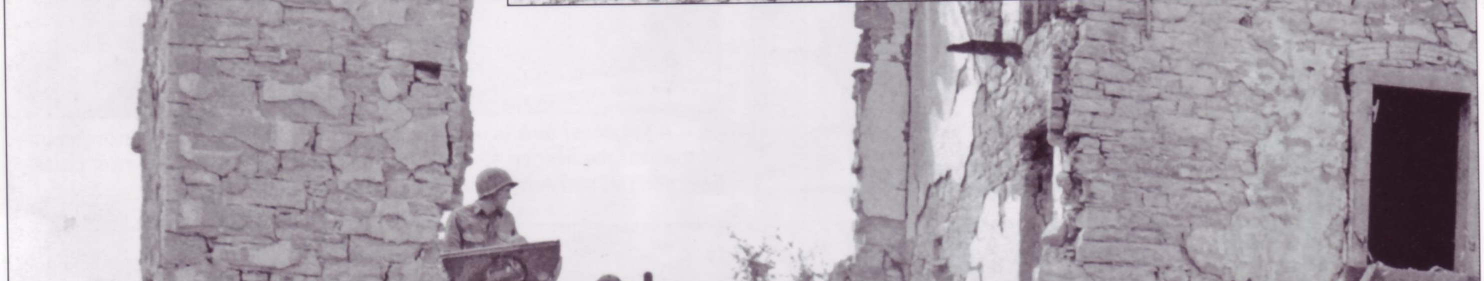
A M4A1 tank with a M1 dozer blade of Co. I, 3/66th Armored, 2nd Armored Division is seen on 19 November 1944 after it ran over a mine on its right side which has bent the dozer arm and ripped up the front bogie.

A M4A1 medium tank of the 16th Engineers, 1st Armored Division fitted with a M1 dozer blade is seen in operation in Italy on 12 September 1944.



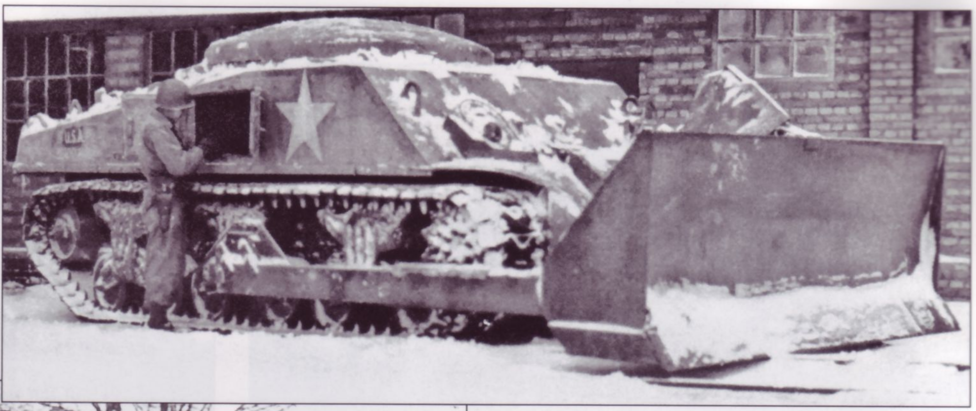


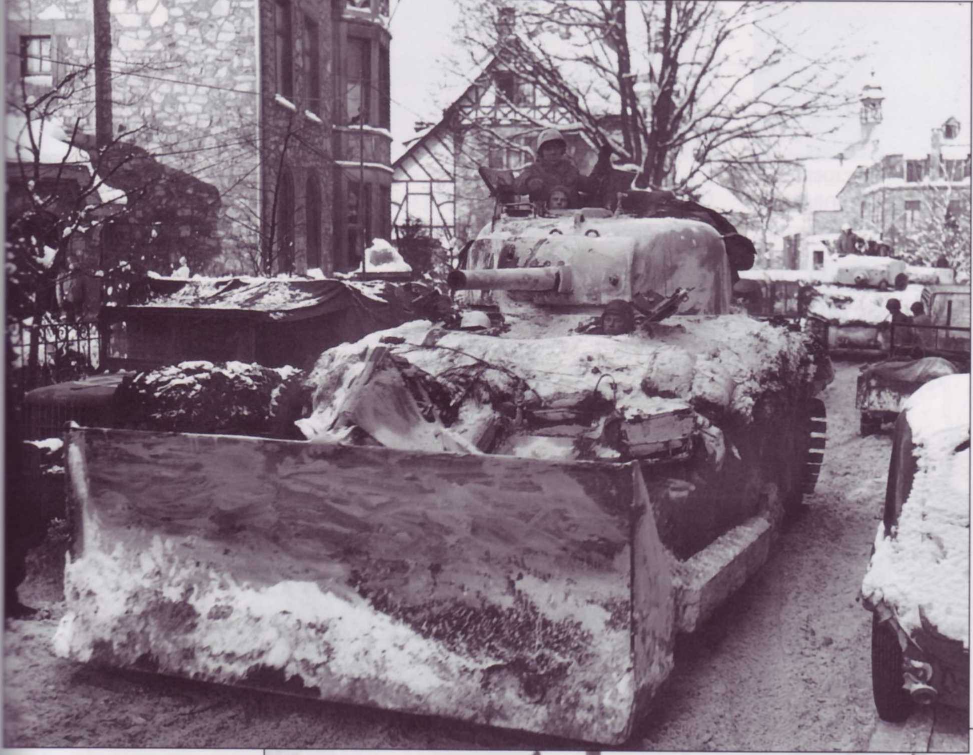
Some of the dozer tanks operated by the Seventh Army had been converted in British REME workshops in Italy and were based on M4A4 tanks, like this one from the 63rd Engineers, knocked out by a mine near Enchenberg, France on 10 December 1944.



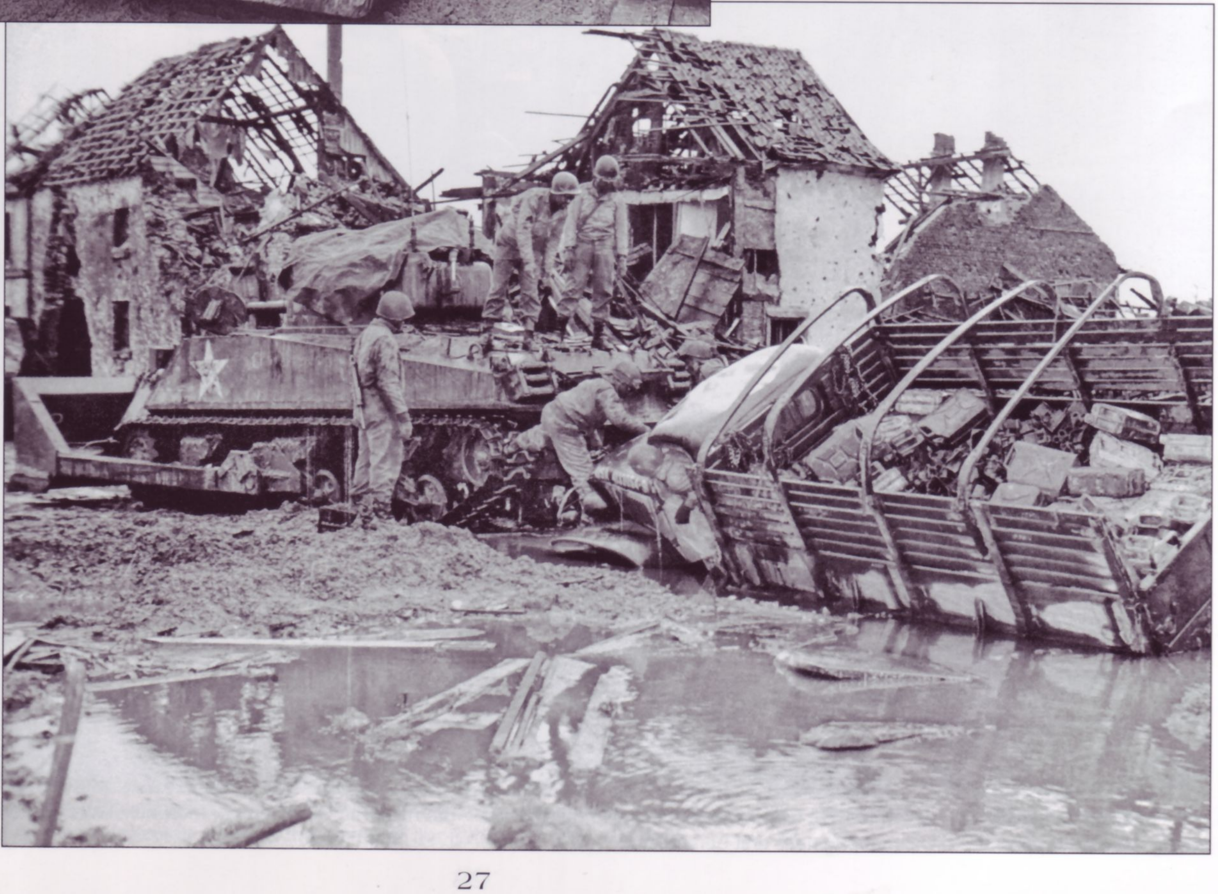
A M4 dozer tank of the 752nd Tank Battalion clears debris from the streets of Firenzuola, Italy on 23 September 1944.

An engineer maintenance company in Luxembourg used a turret-less M4A3 hill fitted with a M1 dozer for support operations in Luxembourg and it is seen here on 9 January 1945 during the Battle of the Bulge. A side access door has also been added.

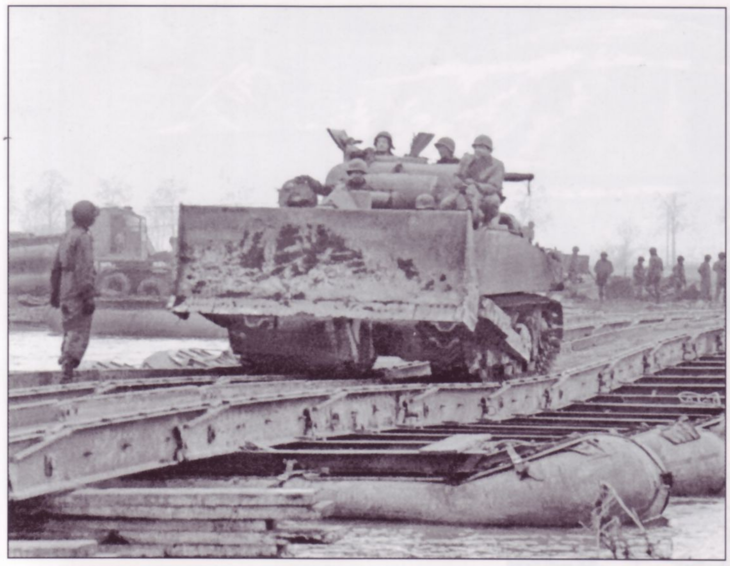




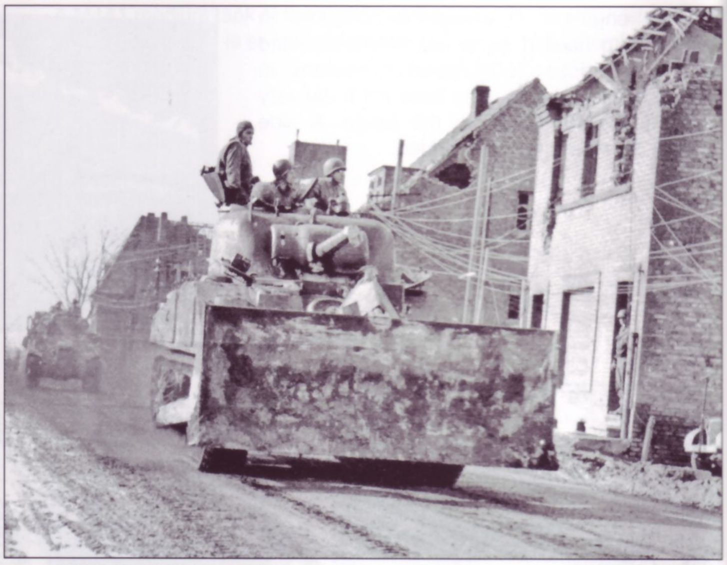
A M4A1 medium tank of the 743rd Tank Battalion fitted with a M1 dozer blade leads a column through Malmédy to help clear away snow in January 1945.



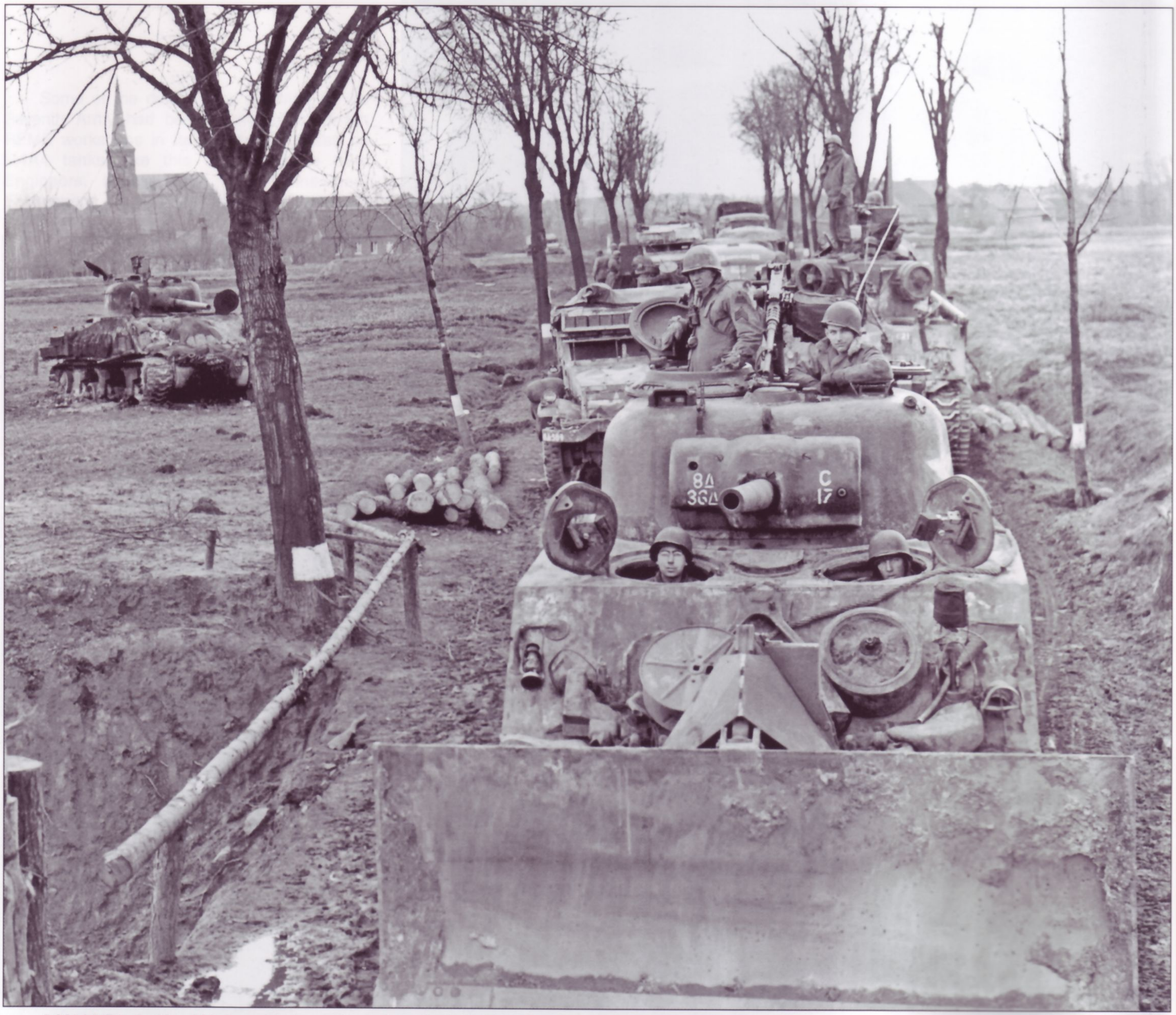
A M4A3 with M1 dozer of the African-American 784th Tank Battalion is seen trying to extract a 2 1/2 ton truck bogged down in the mud in Merode, Germany on 1 February 1945.



A M4A3 with M1 dozer blade of the 750th Tank Battalion crosses a treadway pontoon bridge over the Roer river during Operation Grenade on 24 February 1945.

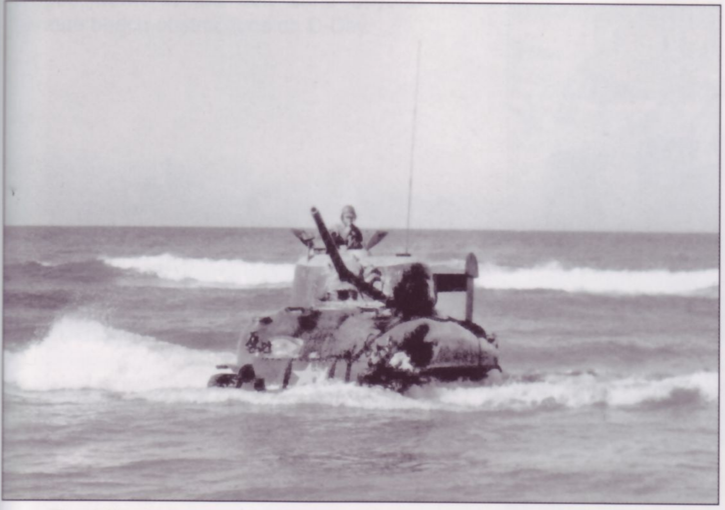


A M4 with M1 dozer of the 5th Armored Division passes through Ubach, Germany on 24 February 1945 during the operations to cross the Roer river.

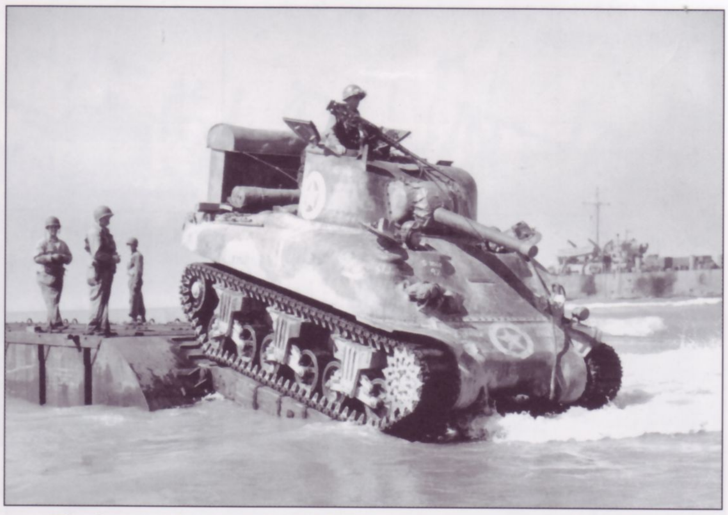


A M4A3 fitted with a M1 dozer leads a column from the 36th Tank Battalion, 8th Armored Division near Merbeck, Germany on 2 March 1945. It is probably being used to support the divisional engineer unit behind it.

Amphibious Landing Tanks

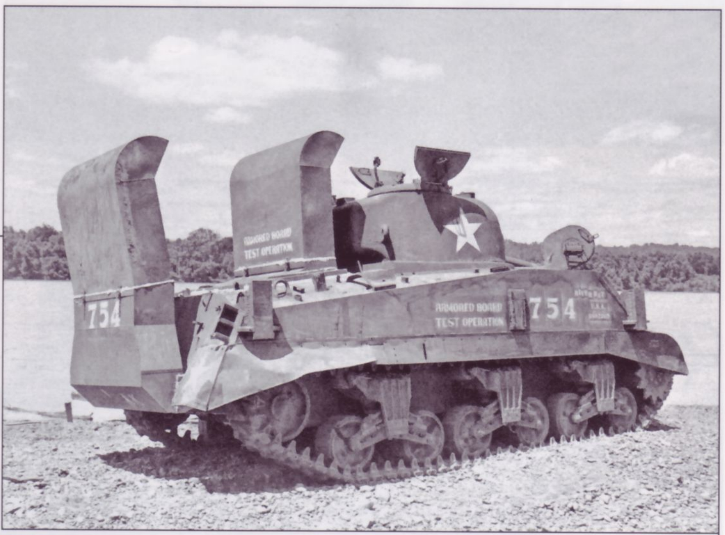


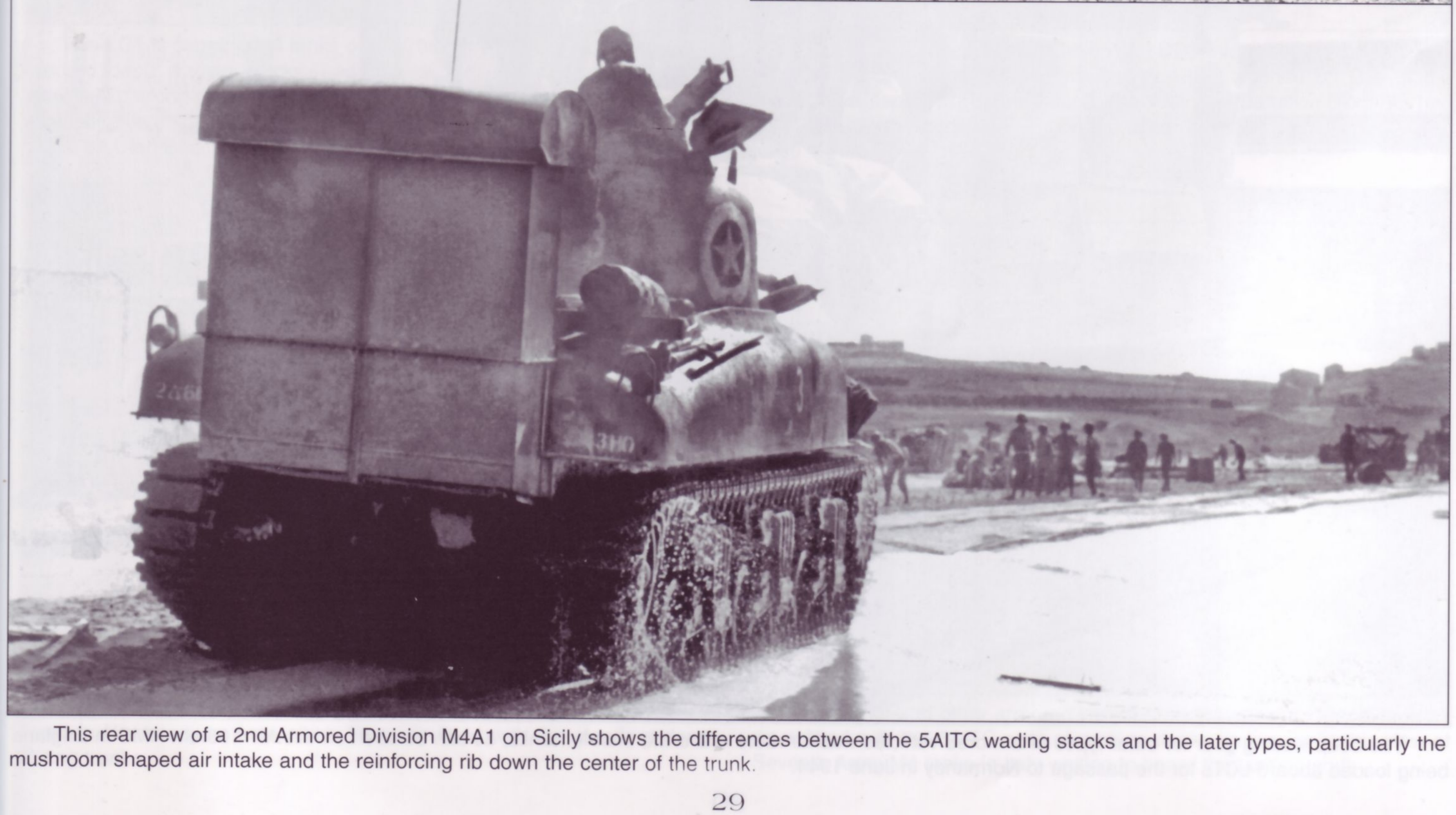
The Fifth Army Invasion Training Center (5AITC) in Algeria developed the first deep wading trunks for amphibious landing, and this M4A1 from Co. F, 66th Armored Regiment, 2nd Armored Division is seen testing a set off the Algerian coast in 1943.



The first combat use of the 5AITC wading stacks was during Operation Husky, the Allied landings on Sicily in July 1943. This M4A1 of the 2nd Armored Division is seen using a set.

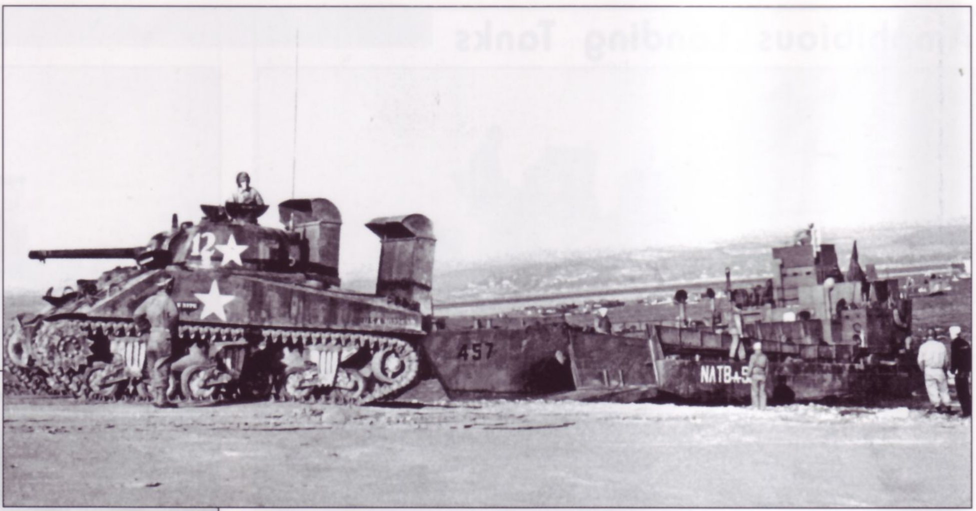
The successful use of the 5AITC wading stacks in Italy led the US Army to develop a standardized kit. This example is being tested on a M4A3 tank at Ft. Knox in 1943.

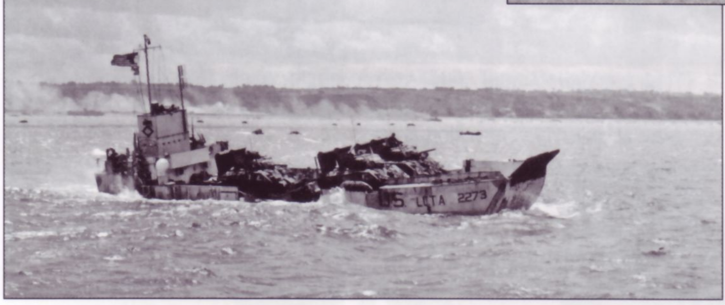




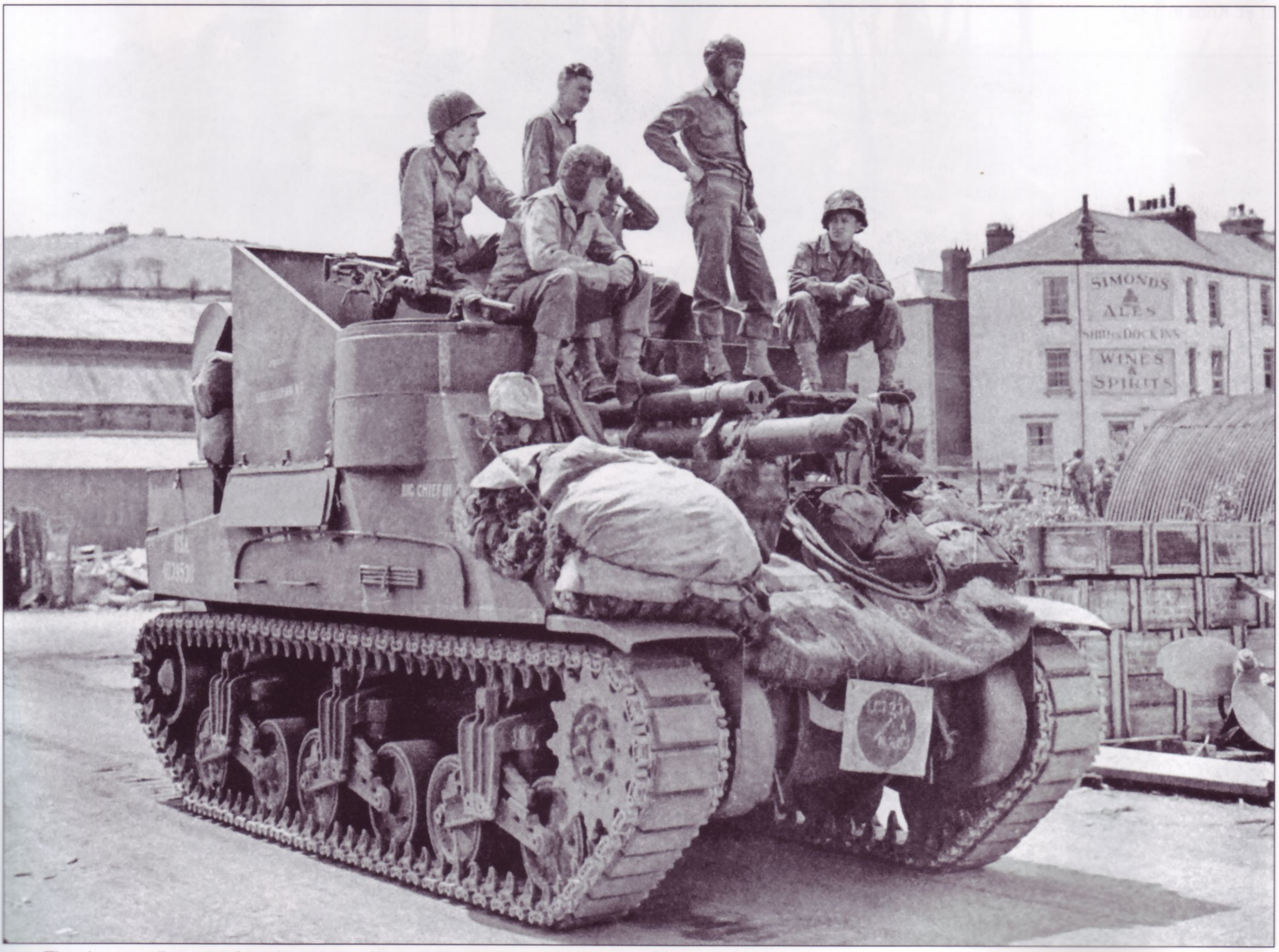
This rear view of a 2nd Armored Division M4A1 on Sicily shows the differences between the 5AITC wading stacks and the later types, particularly the mushroom shaped air intake and the reinforcing rib down the center of the trunk.

A M4 with deep wading stacks comes ashore from a LCM at Slapton Sands on 10 January 1944 during a practice exercise for the Normandy landings.



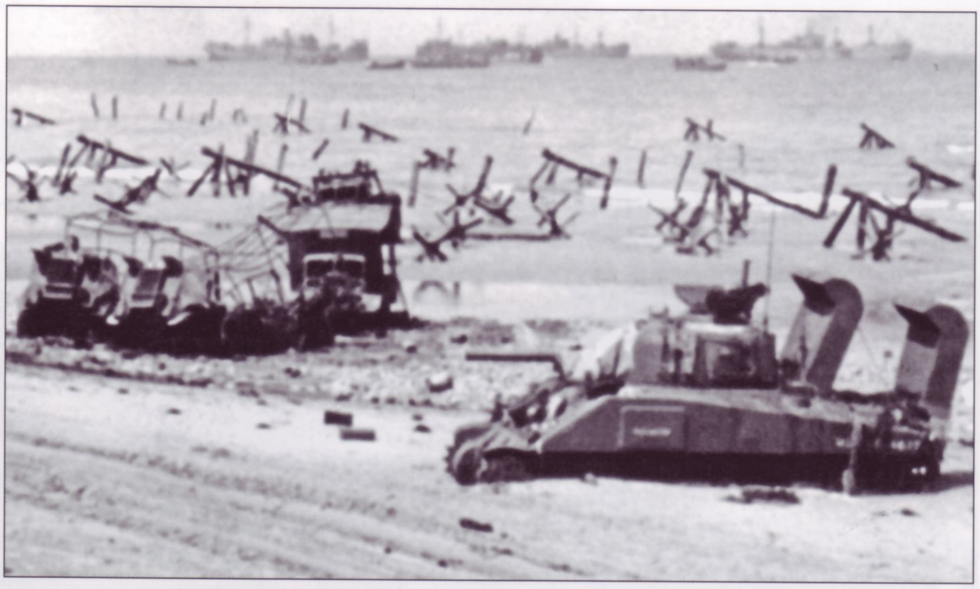


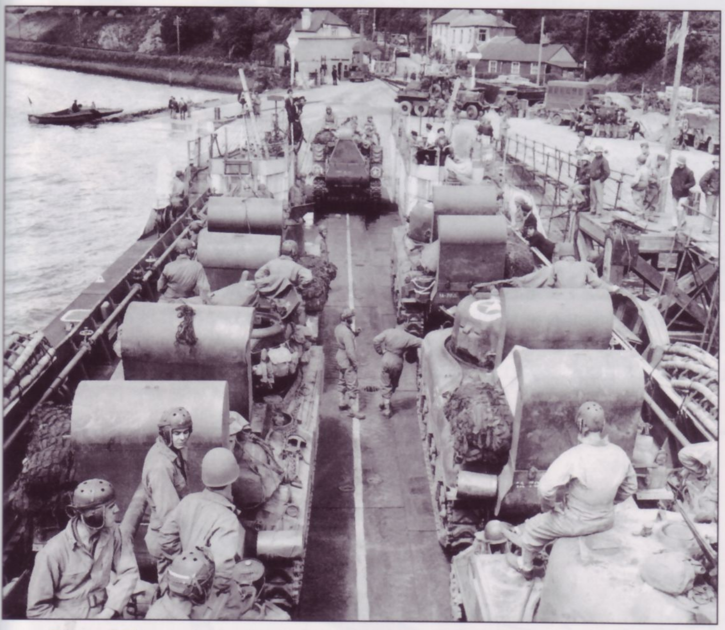
LCT(A) 2273 is seen carrying deep wading M4 tanks of Company A, 743rd Tank Battalion to Omaha Beach on the morning of D-Day. This craft was damaged by German shore fire and split in half and sank later in the day.



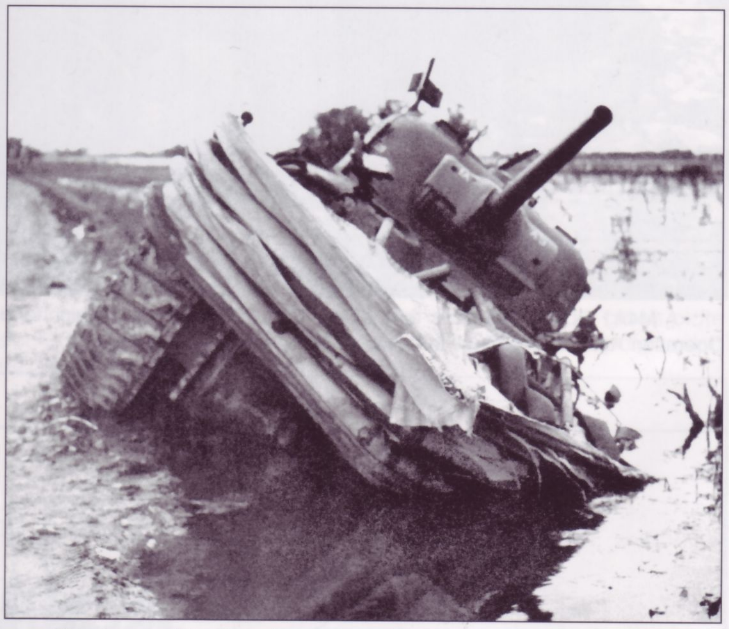
The deep wading gear for other types of armored vehicles was far more elaborate than for tanks, as can be seen on this M7 105mm HMC in England being loaded aboard LCTs for the passage to Normandy in June 1944.

A deep wading M4 of the 741st Tank Battalion is seen here on Omaha Beach after it bogged down in the soft sand beyond the German beach obstructions on D-Day.

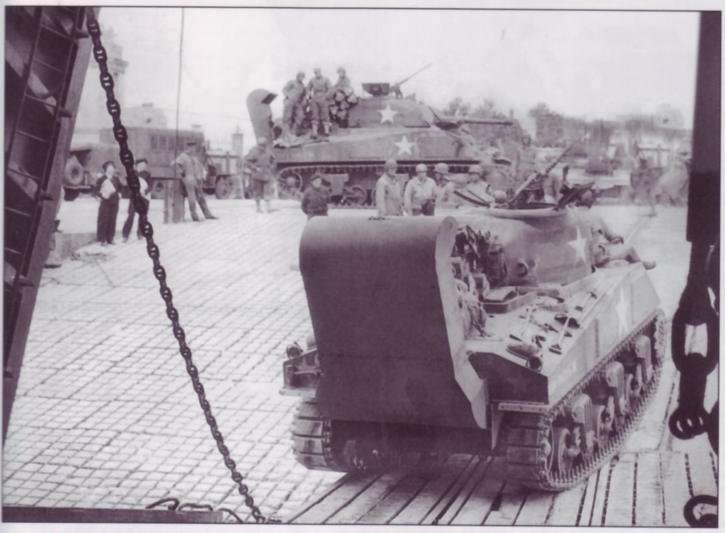




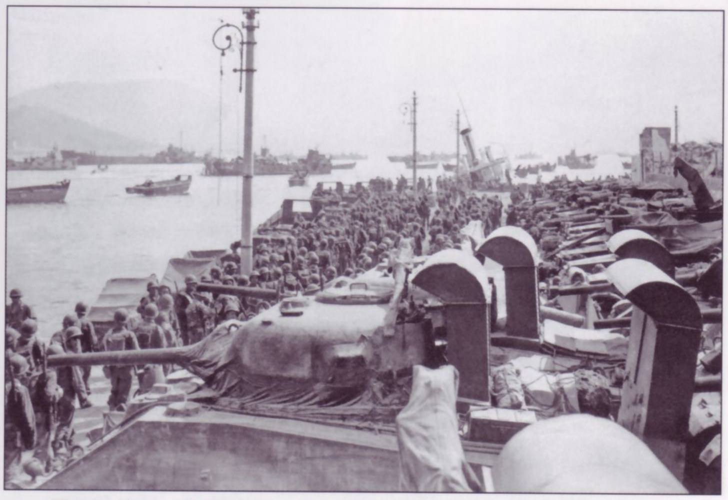
This LCT is carrying M4 tanks of the 70th Tank Battalion fitted with the standard deep wading stacks, and one of the unit's T2 tank recovery vehicles is backing up the access ramp at the front. This photo was taken in Devonshire on the southern English coast two days before these tanks were landed on Utah Beach during the D-Day operations.



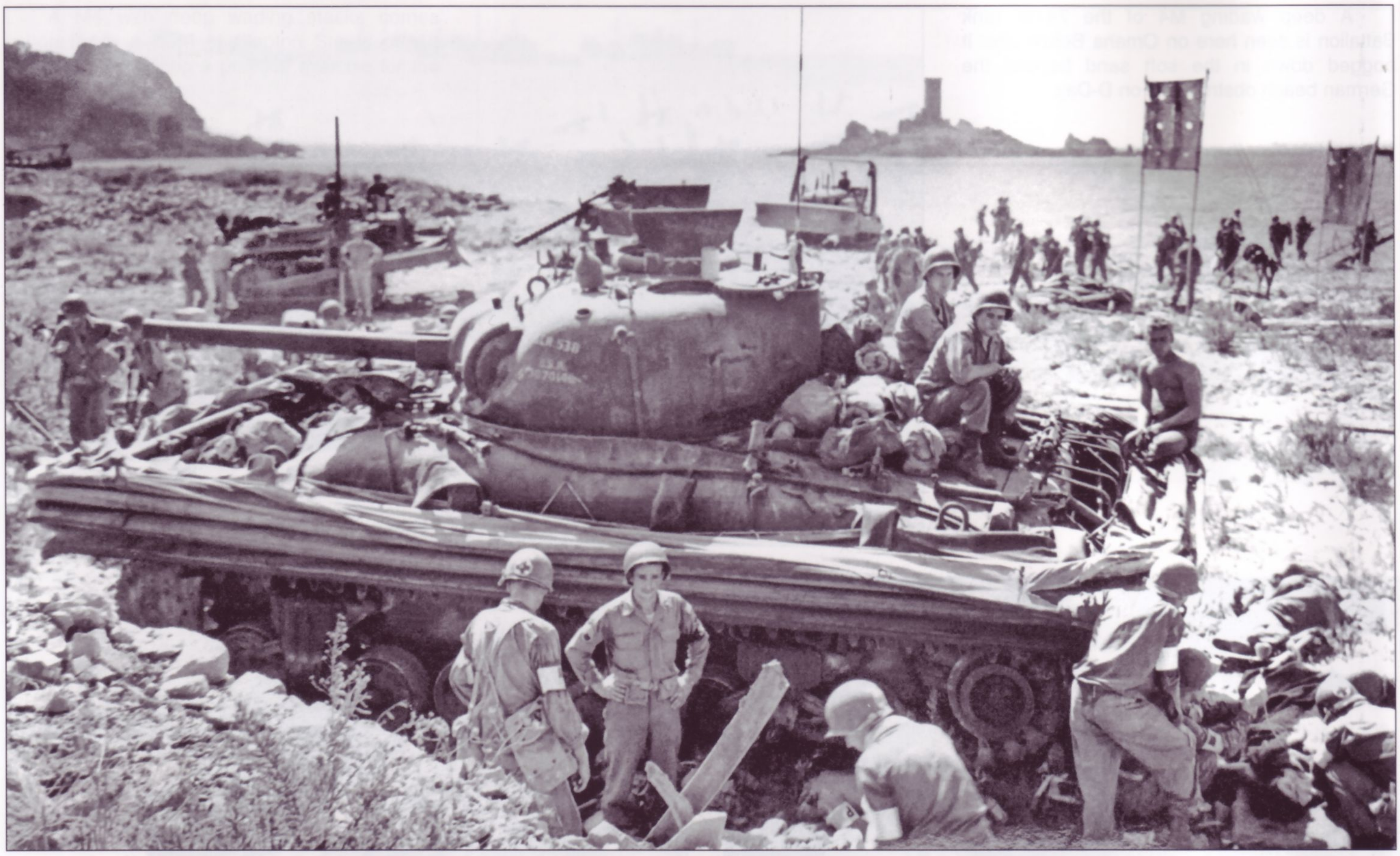
This is one of the few shots taken of a DD tank on D-Day, this disabled tank from Company A, 70th Tank Battalion was pushed off one of the causeways leading from Utah Beach. The 70th Tank Battalion DD tanks had their unit bumper codes painted on the upper lip of the gun mantlet, in this case 1A-A9.



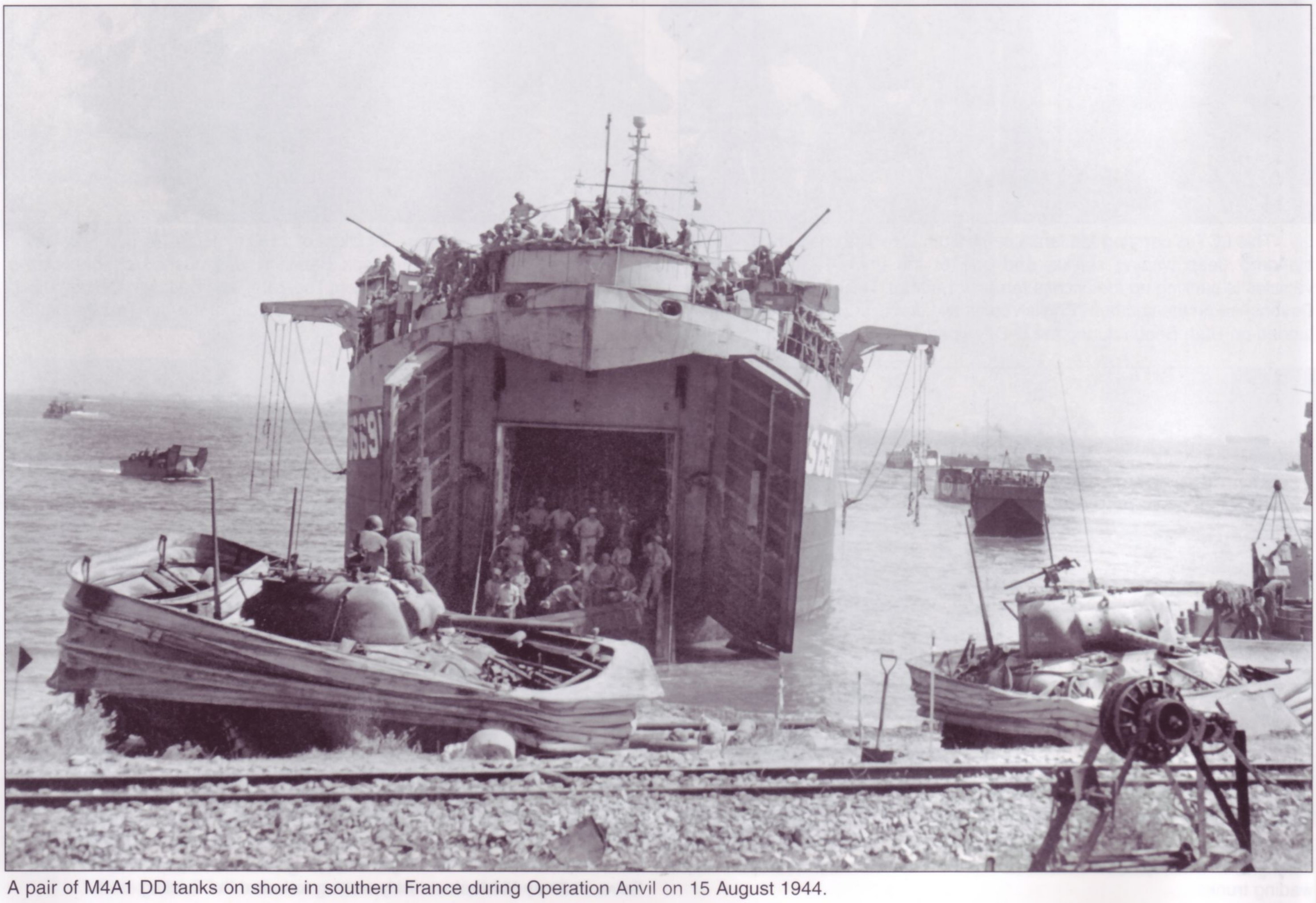
A pair of M4 tanks of the 3rd Armored Division load aboard a LST for transit to Normandy in June 1944. They are fitted with the standard deep wading trunks.



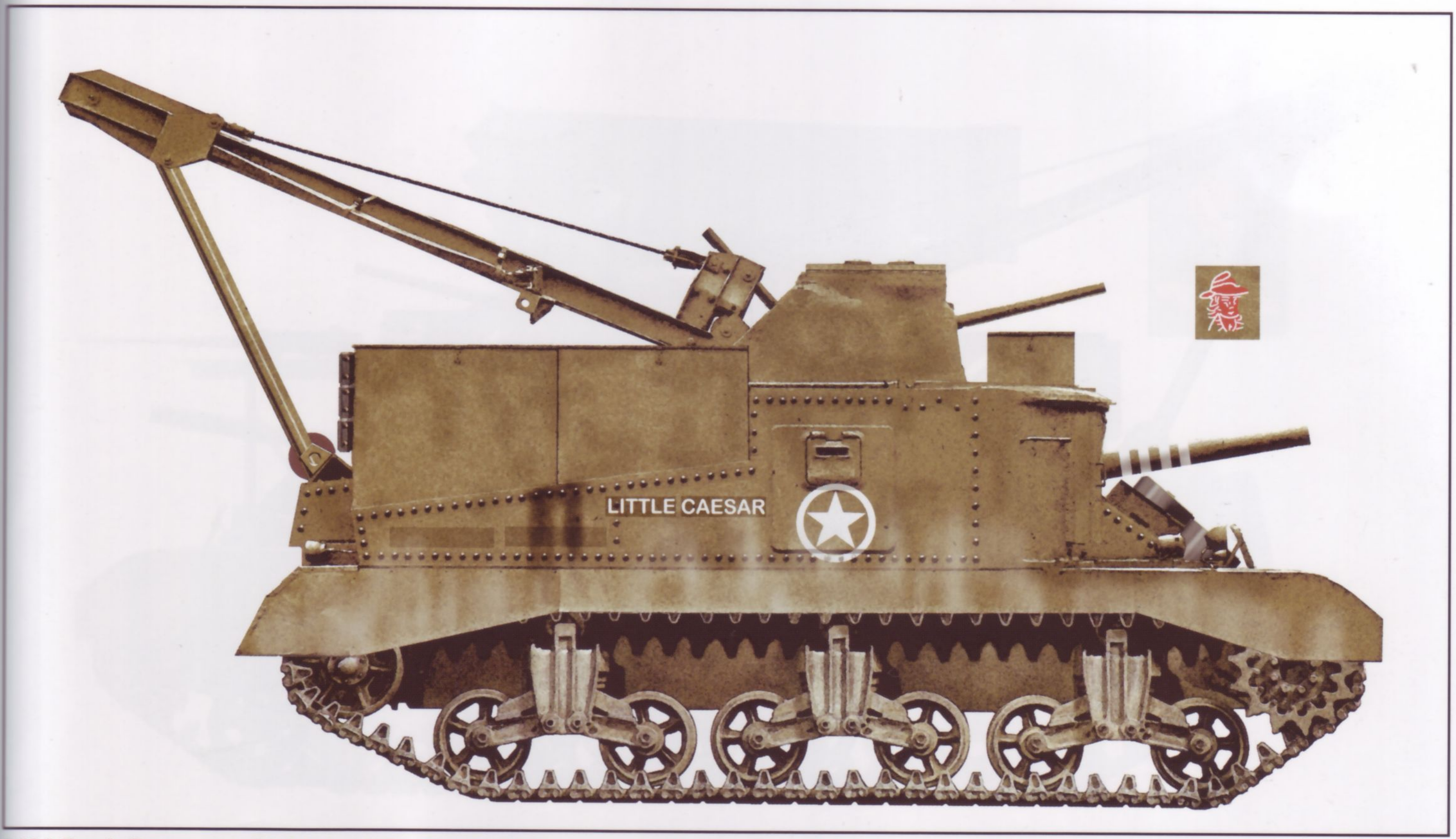
The tanks and other armored vehicles participating in Operation Anvil were fitted with the 5AITC style of wading stacks as is seen in this view of Seventh Army M4 tanks in Italy waiting to board the landing craft.



A M4A1 DD Donald Duck tank of the 753rd Tank Battalion which landed with Camel Force in support of the 36th Division near St. Raphael during Operation Anvil, the landings in southern France on 1 August 1944.

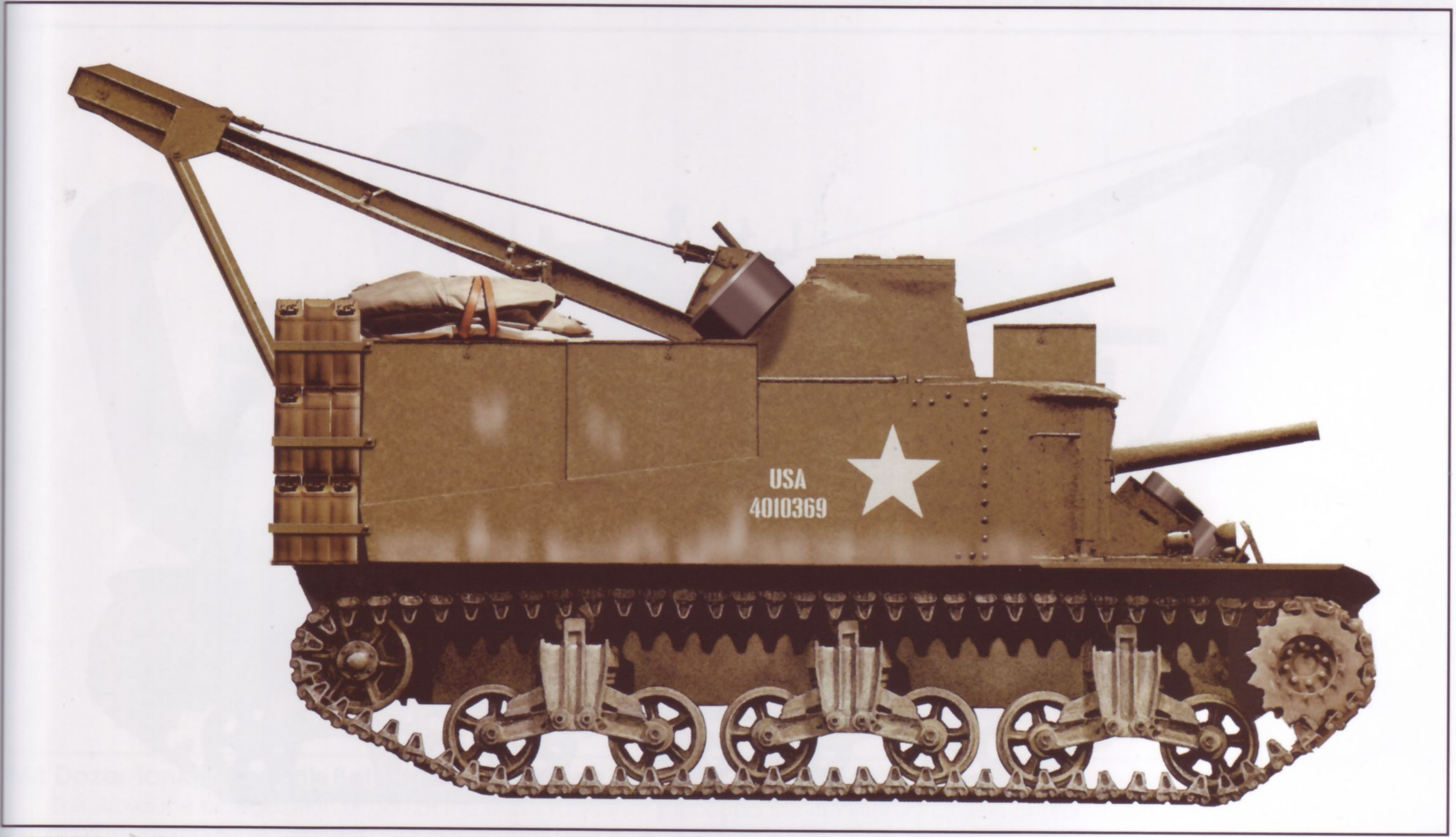


A pair of M4A1 DD tanks on shore in southern France during Operation Anvil on 15 August 1944.



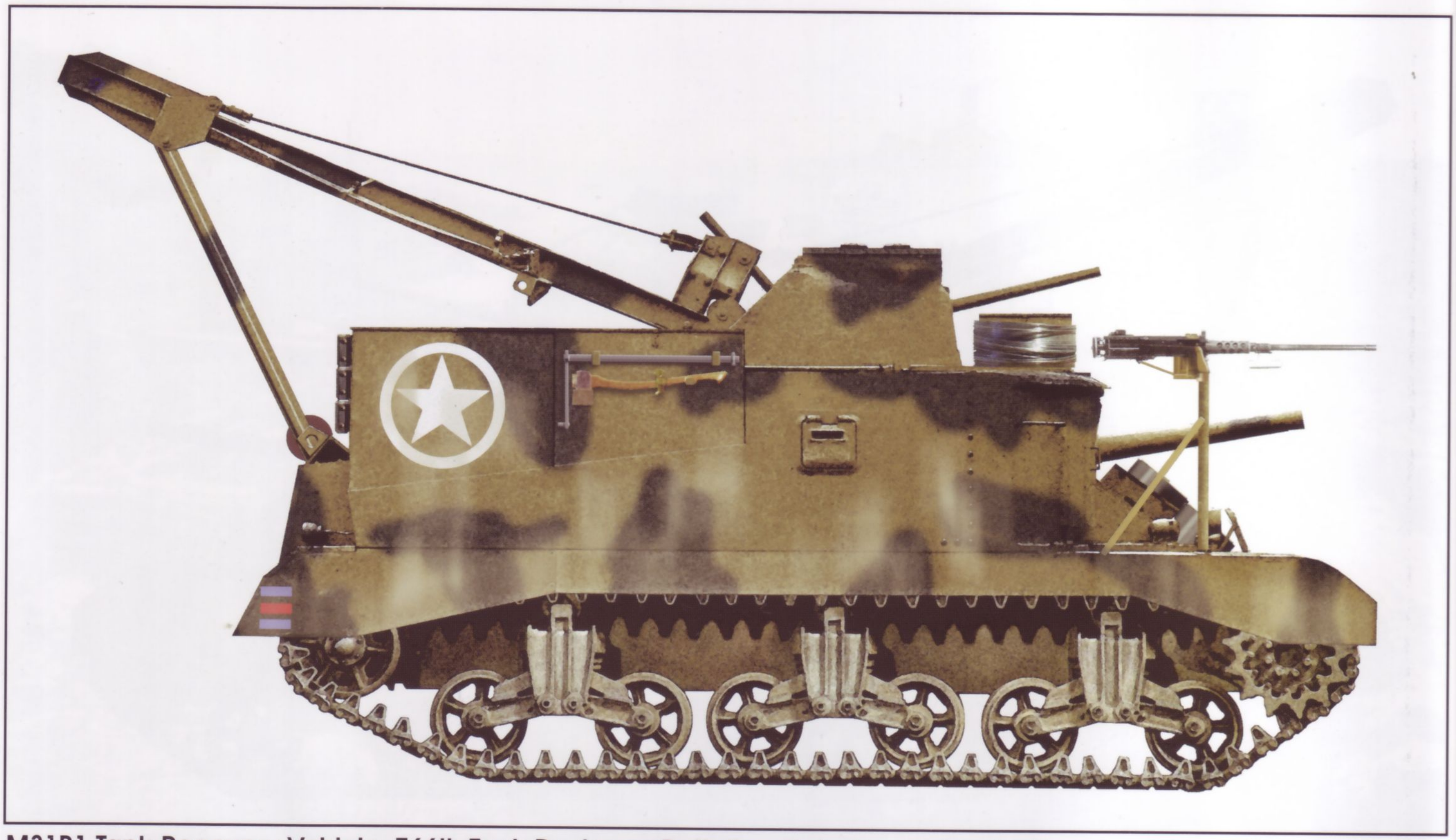
M31 Tank Recovery Vehicle, HQ, Co. B, 13th Armored Regiment, 1st Armored Division, Algeria, 1943

The 1st Armored Division was one of the first units to receive the M31 in 1943 and this dusty example is named "Little Caesar" after the movie character. It is finished in overall olive drab, but the dust has been wiped off over the name. A cartoon was painted on the front glacis plate aside the driver's hatch as seen in the inset drawing. The 1st Armored Division adopted a new set of markings prior to the Italian campaign, using barrel rings to identify units. In this case, the four rings identify the Co. B-HQ platoon.



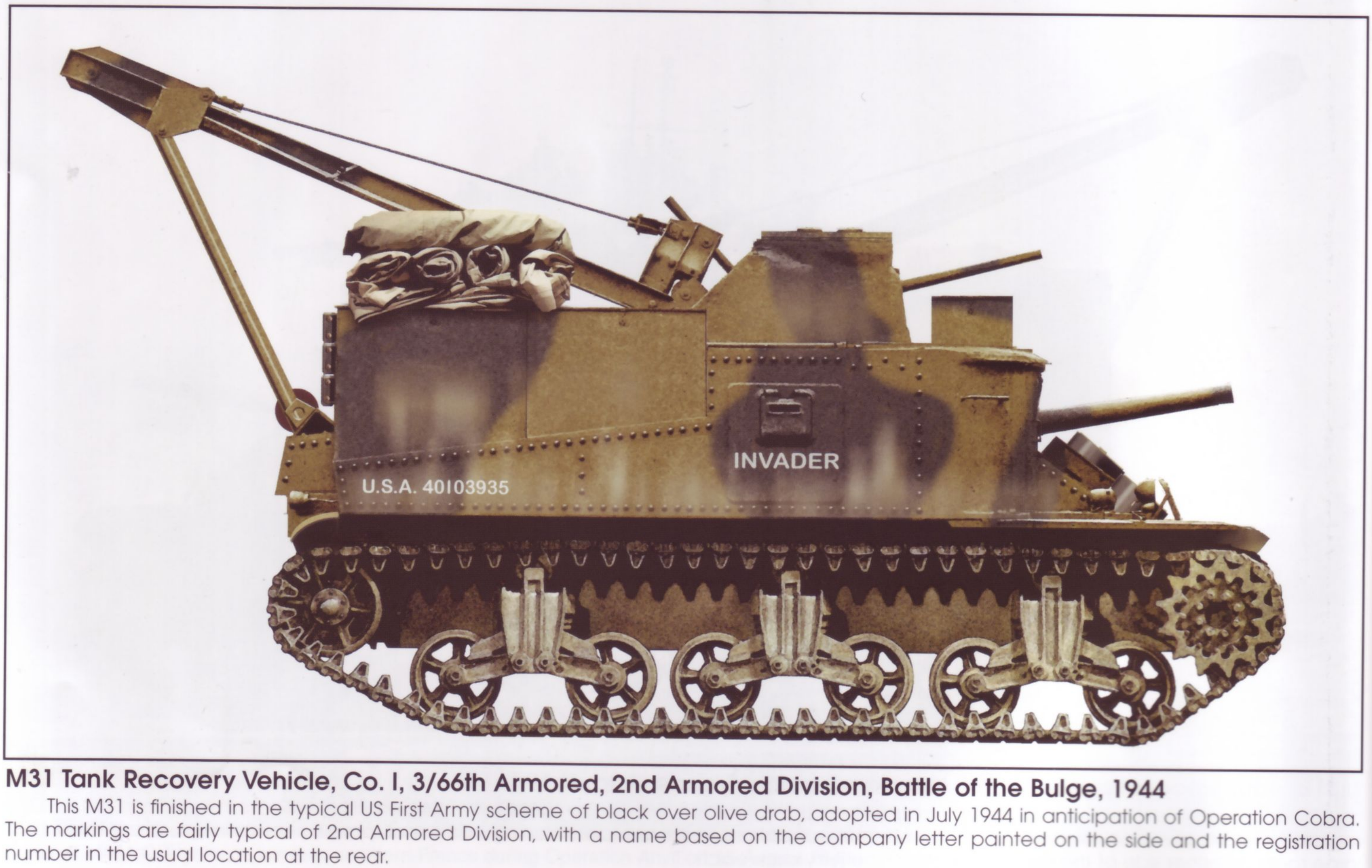
M31B1 Tank Recovery Vehicle, 7th Armored Division, France, August 1944

This M31B1 shows the simple markings typical of the 7th Armored Division in the summer of 1944, only the national insignia and the vehicle registration number. The crew has made a number of modifications to the vehicle including additional spare wheel stowage on the turret, and large racks on either side of the rear which carry nine jerry cans each.



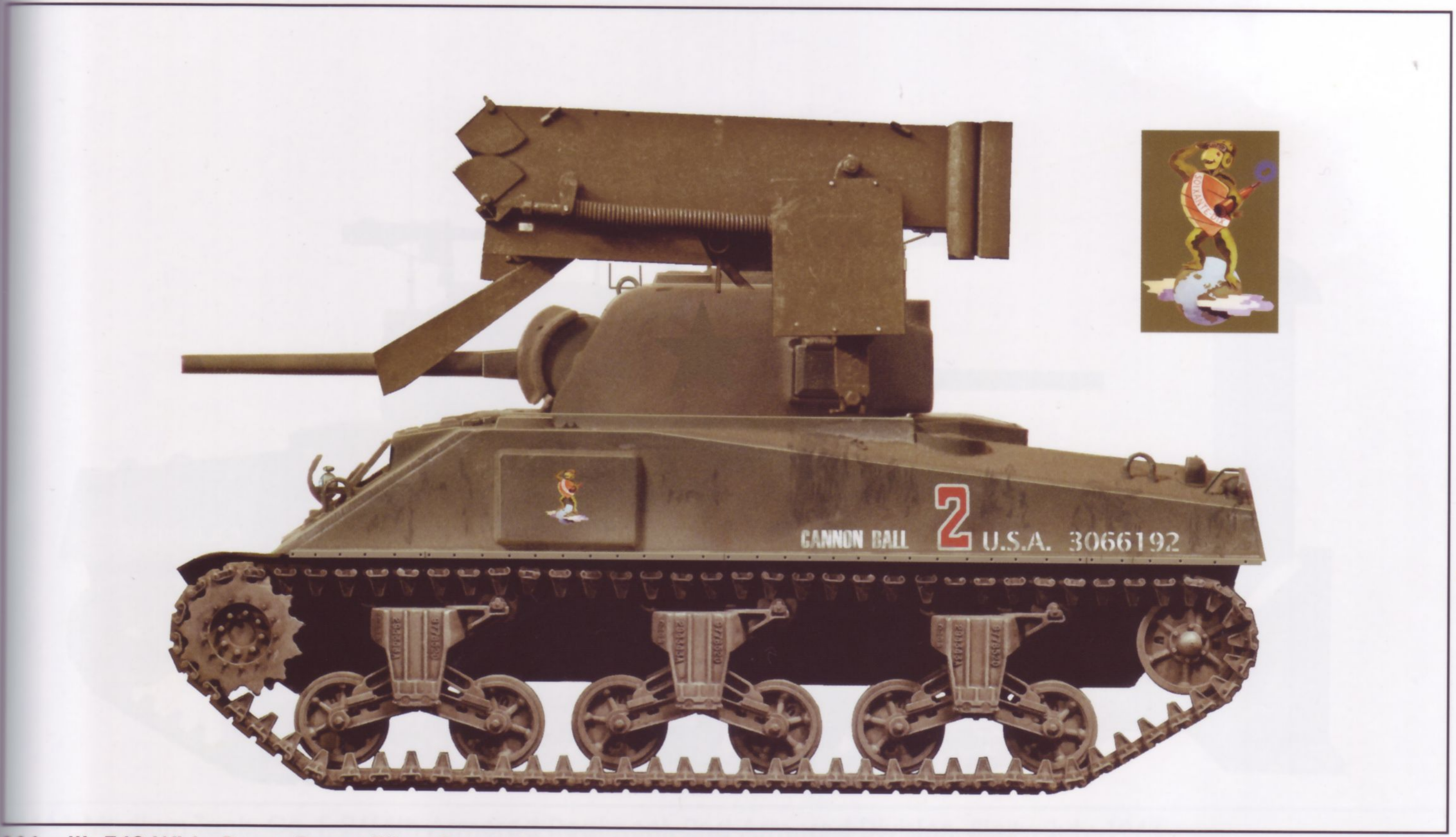
M31B1 Tank Recovery Vehicle, 766th Tank Destroyer Battalion, Italy, November 1944

The most common camouflage scheme in Italy in 1944 was much the same as in northwester Europe- a pattern of black sprayed over the usual olive drab. This vehicle has the three colored bars of transit markings painted in a non-standard location at the rear of the side-skirts. The colors for this battalion are not certain as the numeric code which identifies the colors cannot be seen on the photo. A large star insignia, typical of the Italian theater, is seen on the hull side. Among the crew's modifications are additional tool stowage on the hull side, and a pedestal mount for a .50 cal. machine gun on the right fender. This M31 TRV was named "Big Sad Sack", and further details of the markings on the front of the vehicle can be seen on the photo elsewhere in this book.



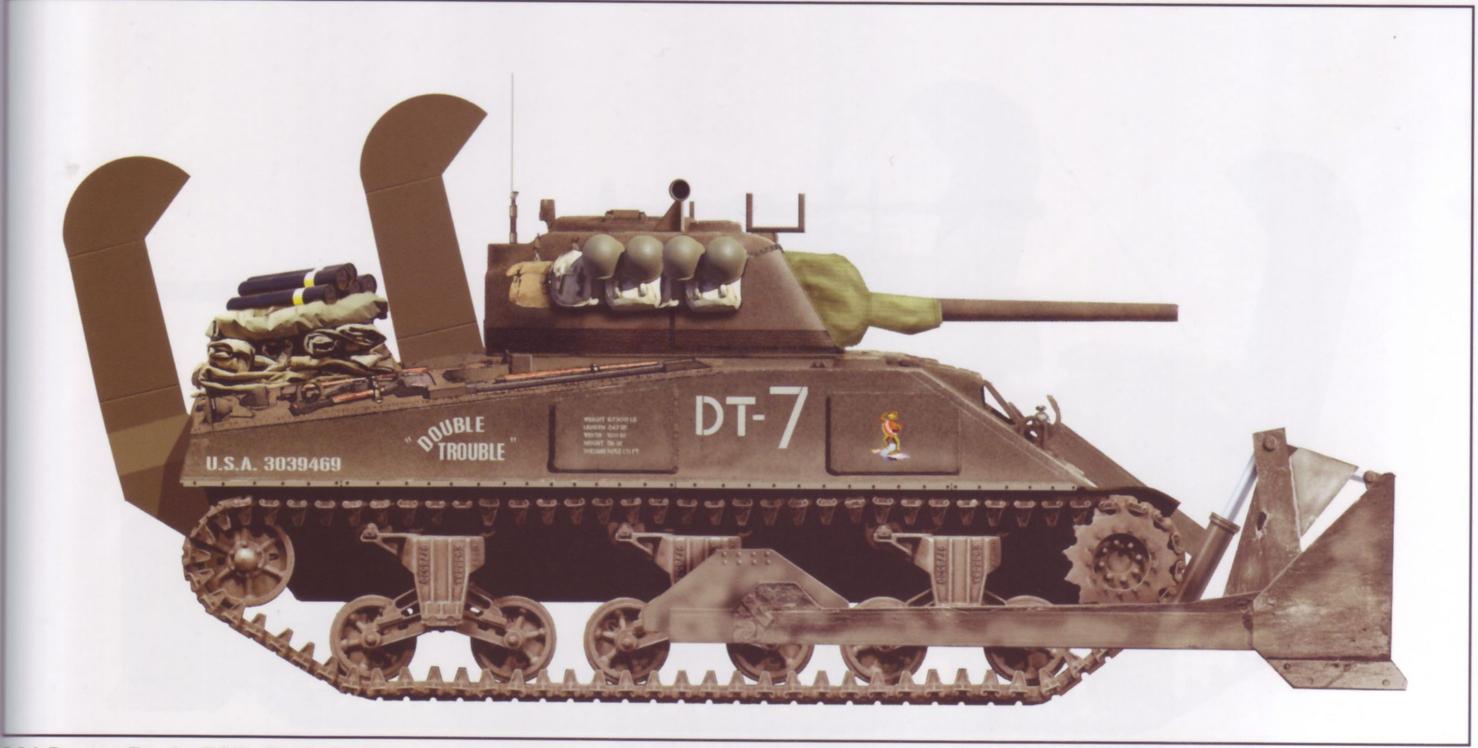
M31 Tank Recovery Vehicle, Co. I, 3/66th Armored, 2nd Armored Division, Battle of the Bulge, 1944

This M31 is finished in the typical US First Army scheme of black over olive drab, adopted in July 1944 in anticipation of Operation Cobra. The markings are fairly typical of 2nd Armored Division, with a name based on the company letter painted on the side and the registration number in the usual location at the rear.



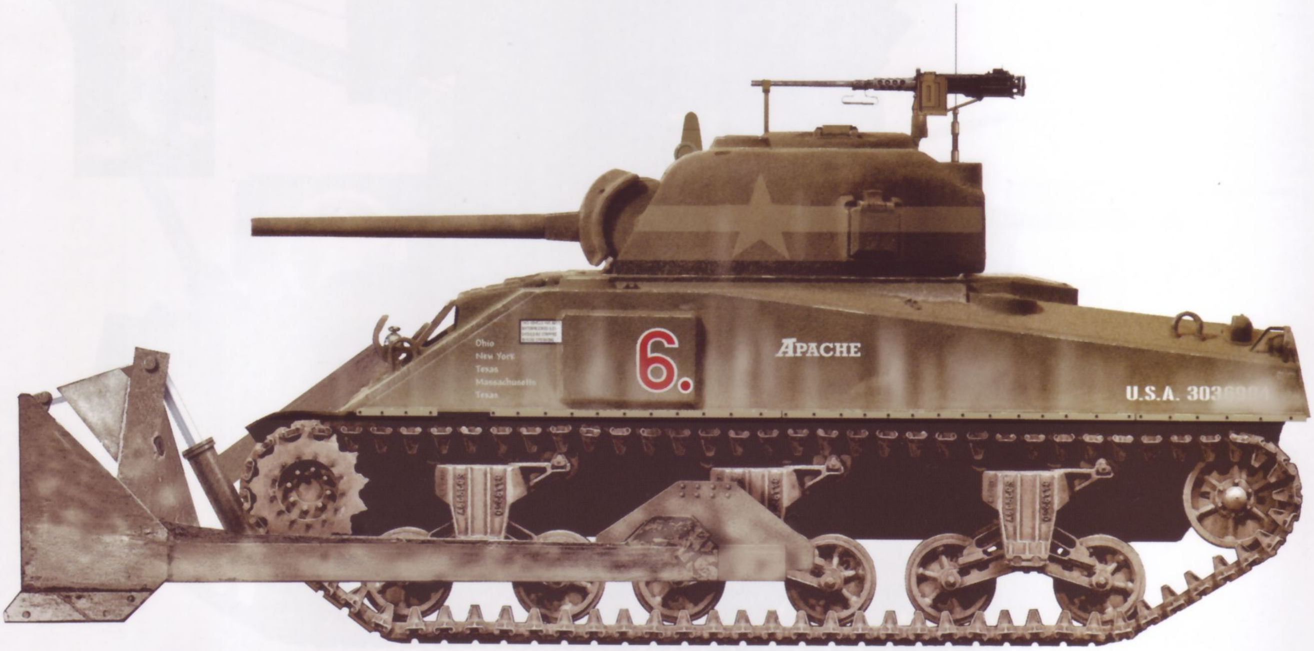
M4 with T40 Whiz-Bang Demolition Rocket Launcher, Co. C, 70th Tank Battalion, England, May 1944

This was the planned configuration of the T40 launchers for the assault on Normandy. A number of 70th Tank Battalion tanks were fitted with the launchers, but after trials against sea-walls in England, the launchers were removed prior to D-Day as ineffective and needlessly dangerous to the crew. The M4 tank seen here did land on Utah Beach on D-Day, but without the launcher. The markings on "Cannonball" include the 70th Tank Battalion mascot "Joe Peckerwood" seen in detail in the inset drawing. The tanks of the 6th Armored Group, US VII Corps typically painted large tactical numbers on the hull sides in red edged in white as seen here.



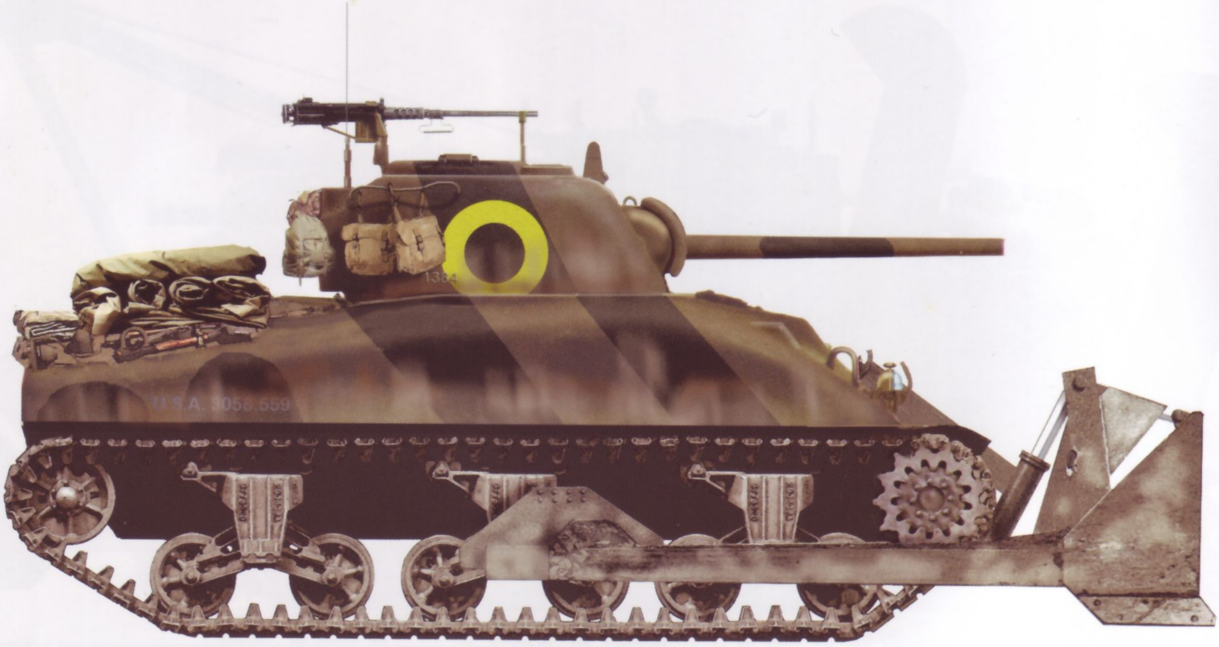
M4 Dozer Tank, 70th Tank Battalion, Utah Beach, D-Day, 6 June 1944

This shows the configuration of one of the dozer tanks that supported the 4th Infantry Division at Utah Beach on D-Day. It is fitted with the standard M1 dozer blade, and also has the mounting attachments for the T40 Whiz-Bang demolition rocket launcher which was considered for use on D-Day but rejected. The tank has been prepared for deep wading from its LCT, and so has wading trunks and various types of waterproofing including a cover over the gun mantlet, and sealing around the turret ring and other locations. The tank was named "Double Trouble" and is number in non-standard fashion as DT-7. The DT may indicate "Demolition Tank" which was its intended role on D-Day. The 70th Tank Battalion mascot, "Joe Peckerwood" is painted on the hull side.



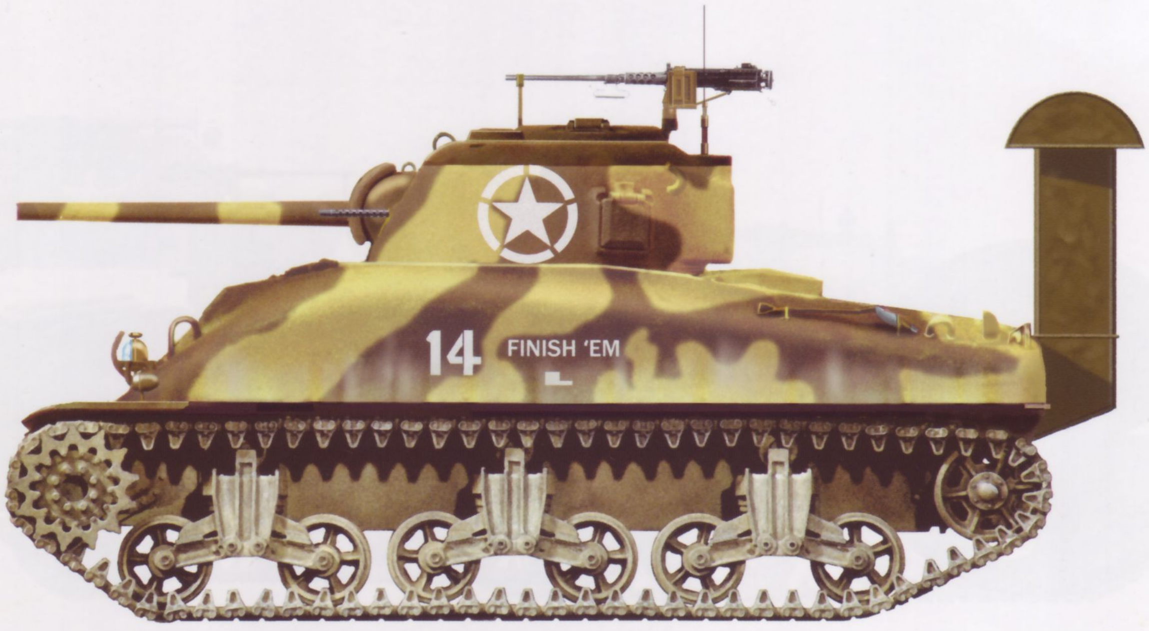
M4 Dozer Tank, 746th Tank Battalion, Normandy, June 1944

"Apache" is a fairly typical example of a dozer tank during the early Normandy campaign. It served with the 746th Tank Battalion, the back-up battalion for Utah Beach as part of the 6th Armored Group, US VII Corps. Apparently the armored group distinguished between the battalions under its command using a small "pip" behind the tactical number to separate the 70th and 746th Tank Battalions. "Apache" has signs of its preparation for deep wading, such as the remnants of the canvas waterproofing and mastic cement around the base of the turret. Other markings include the usual small shipping instructions on the hull side. The crew has painted the names of their states on the front hull side.



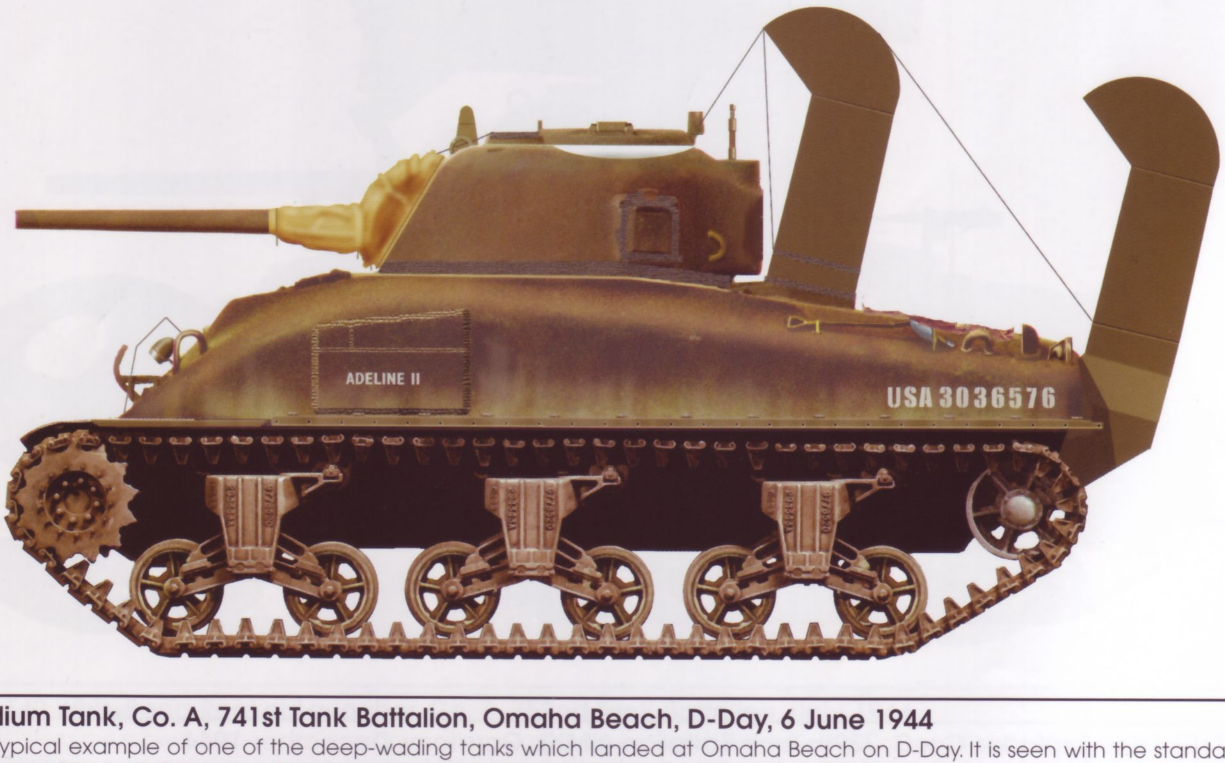
M4A1 Dozer Tank, 16th Engineers, 1st Armored Division, Italy, September 1944

The 1st Armored Division was one of the first units to receive the new dozer tanks in May 1944 in time to take part in the Anzio break-out operation. This example from the 16th Engineers is painted in the usual black over olive drab camouflage scheme common in the 1st Armored Division in the summer of 1944, but the diagonal pattern is unusual. The significance of the turret marking is not clear. It may be the remnants of the yellow-circled white star mandated by Fifth Army for the Sicily operation, or it may be a tactical marking of the engineers.



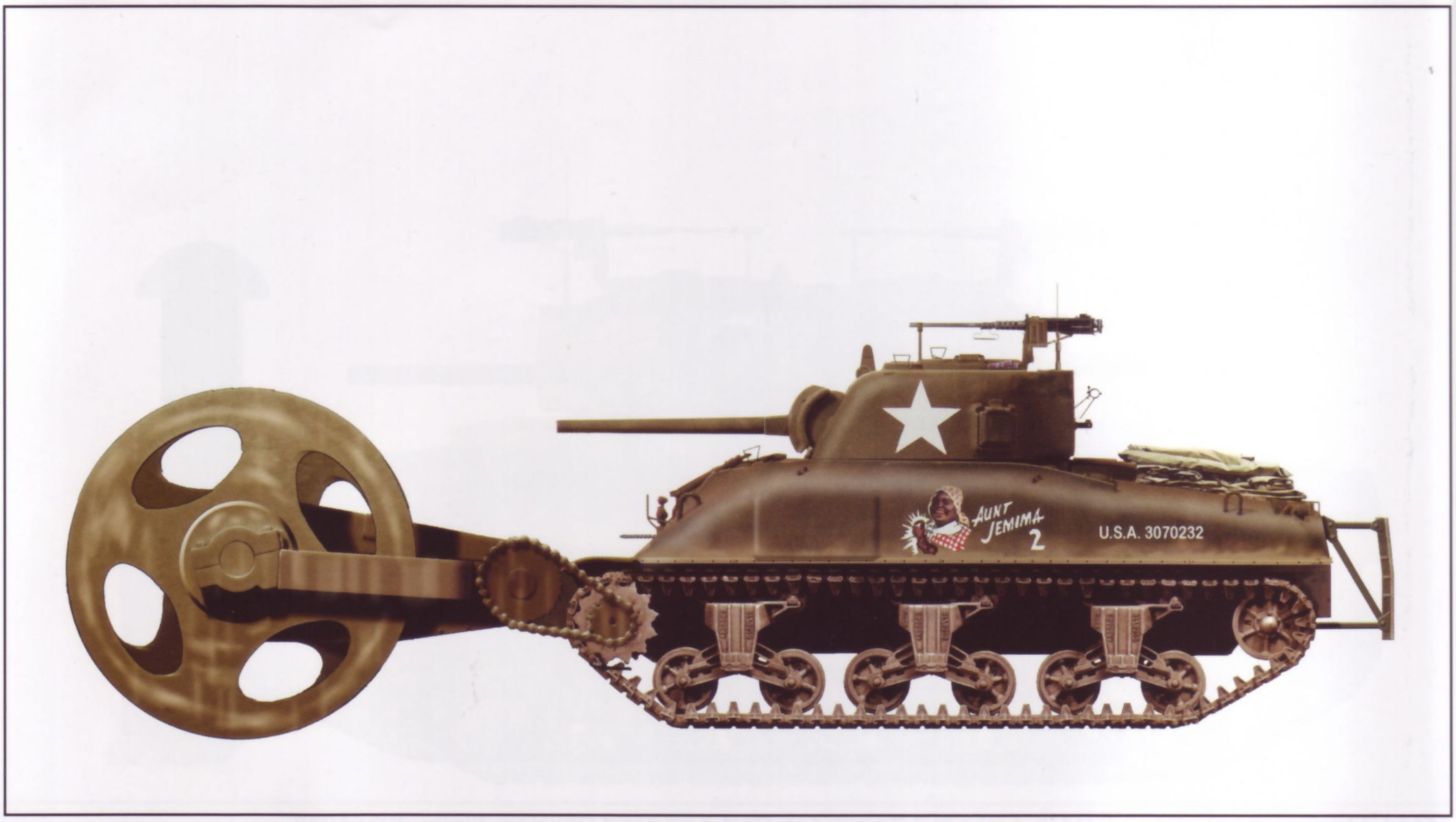
M4A1 Medium Tank, Co. F, 2/66th Armored Regiment, 2nd Armored Division, Sicily, July 1943

Prior to the start of Operation Husky, the US Army adopted a new camouflage scheme of earth yellow over olive drab as seen here. Co. F of the 66th Armored was the resident tank experimental unit at the Fifth Army Invasion Training Center (5AITC) which developed the wading trunk seen here. This unit maintained the practice of painting the roof white for aerial recognition, but this was painted over prior to the landing which accounts for the darker and fresher coat of olive drab on the turret roof. There appears to have been some confusion about the details of the divisional tactical insignia, as the one seen here does not match the instructions. This battalion also used tactical numbers painted on the hull side, a practice which was not universal in the division.



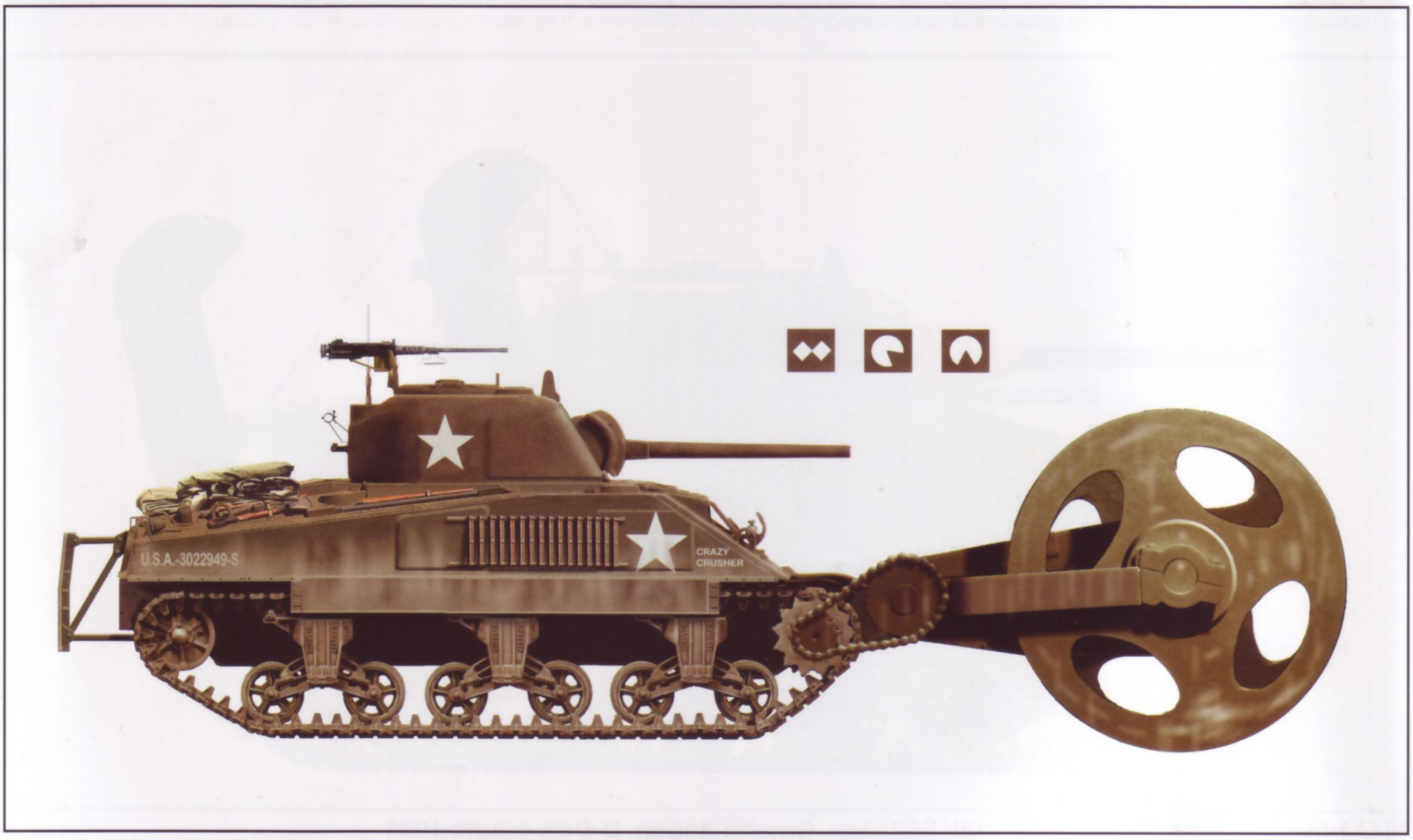
M4A1 Medium Tank, Co. A, 741st Tank Battalion, Omaha Beach, D-Day, 6 June 1944

This is a typical example of one of the deep-wading tanks which landed at Omaha Beach on D-Day. It is seen with the standard pattern wading trunks used by both British and American tanks at Normandy. Other signs of the water-proofing are evident such as the canvas cover over the gun and the sealant around the turret ring and other opening. The 741st Tank Battalion used simple markings including a vehicle name as seen here starting with the company letter. An Allied circled star insignia was painted on the turret roof and part of it can be seen pouring over the turret roof.



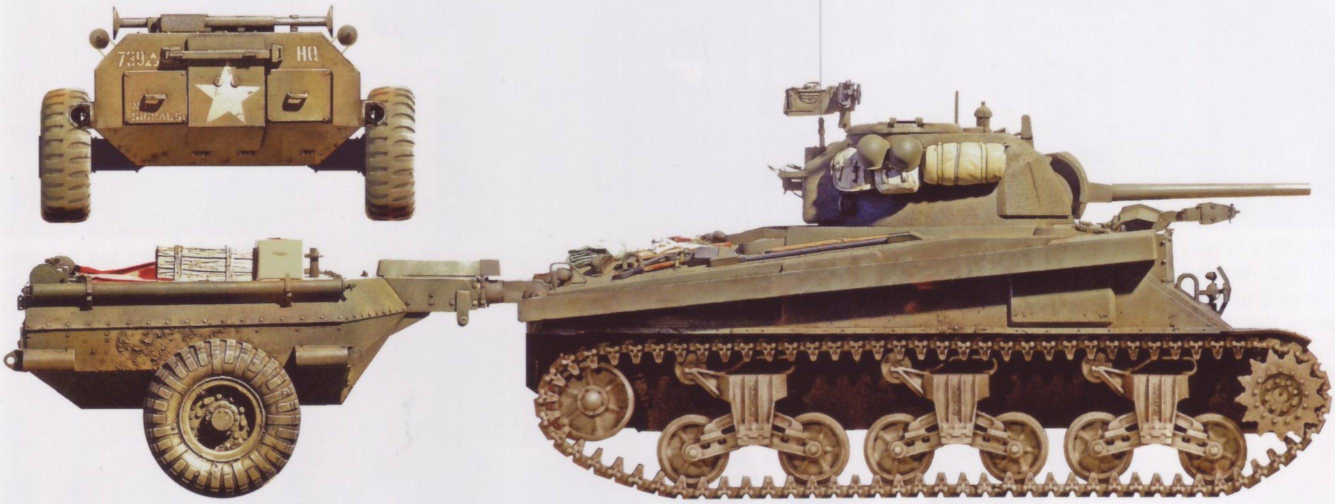
M4A1 with T1E3 Mine Exploder, England, May 1944

A demonstration team was assembled in England in May 1944 to display the new the T1E3 mine exploder equipment to senior officers. Both tanks were painted with an "Aunt Jemima" cartoon based on the advertisement art from the popular pancake brand. The T1E3 was popularly called the "Aunt Jemima" by US troops, but it's unclear if this preceded the use of the cartoon on the demonstration tanks, or it was a result of this demonstration.



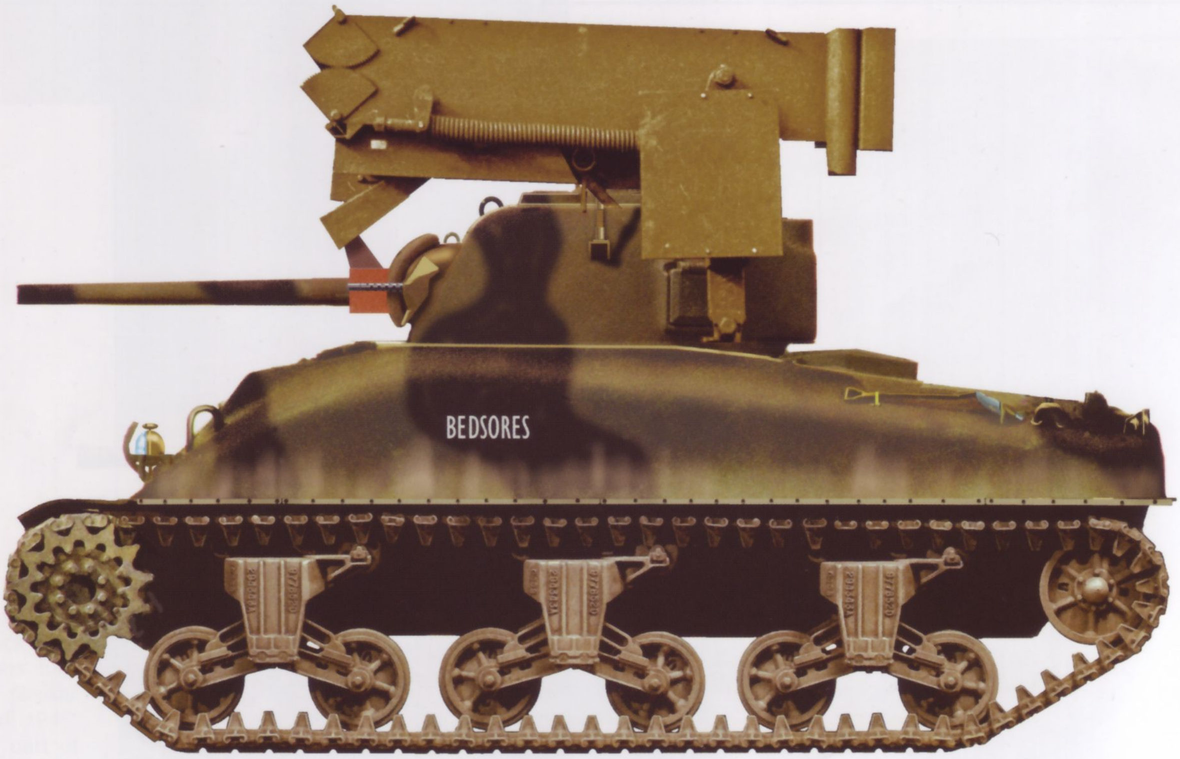
M4 with T1E3 Mine Exploder, Co. C, 739th Tank Battalion (SMX), Germany, December 1944

This M4 shows a fairly typical configuration for the T1E3 Aunt Jemima mine-exploder. The tank has several minor modifications such as the use of a non-standard rack for grouser stowage on the hull side. The tank carries its name "Crazy Crusher" on the hull side. The mine exploders of this battalion sometimes carried small geometric symbols like those shown in the inset drawings which may have identified platoons or companies of the battalion.



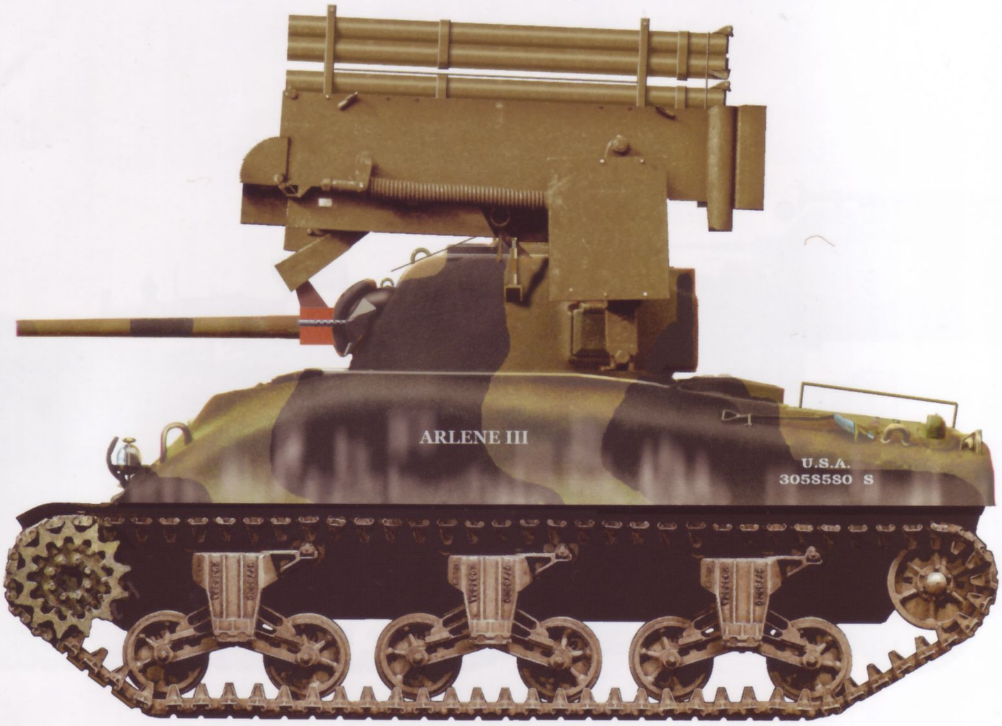
M4 Crocodile Flamethrower, HQ Co., 739th Tank Battalion (SMX), Germany, February 1945

Only four M4 Crocodile flamethrowers were completed for the US Army, and they first saw combat with the 739th Tank Battalion (SMX) during the attack on the Julich citadel during Operation Grenade. The markings were very simple, and the rear view of the fuel trailer shows a white Allied star, and the usual bumper codes.



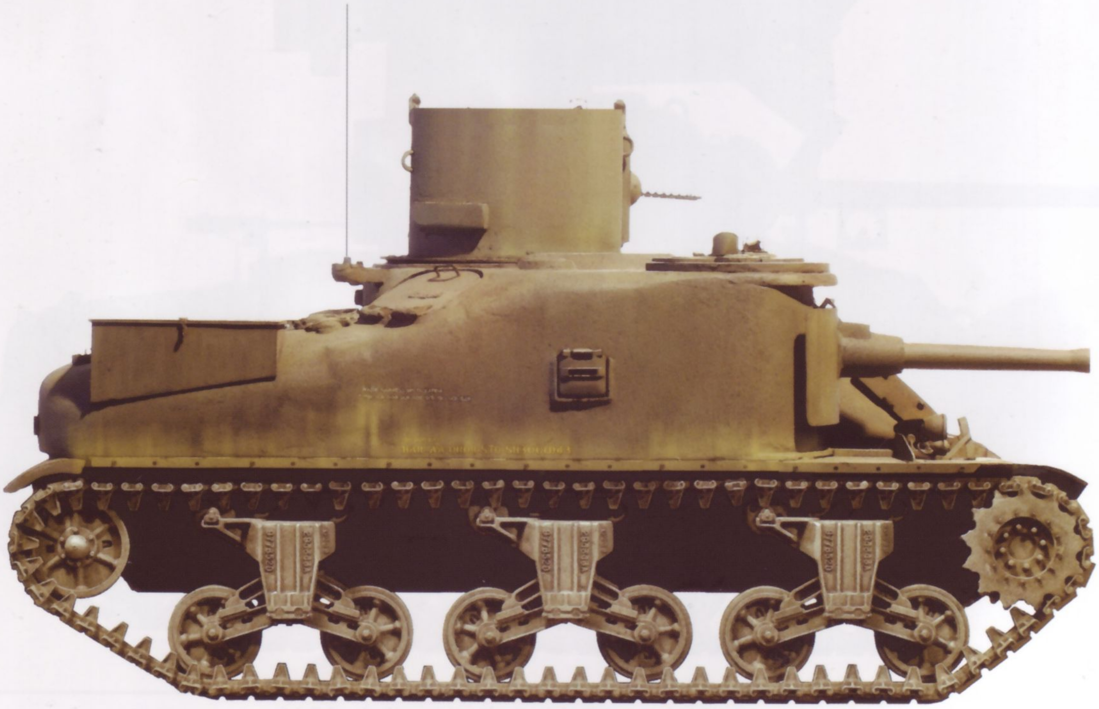
M4A1 with T40 Whiz-Bang Rocket Launcher, Co. B, 752nd Tank Battalion, Italy 1944

"Bedsores" from the rocket platoon of Company B, 752nd Tank Battalion is a typical example of the T40 launchers deployed in Italy in the autumn of 1944. The launch rack was attached to the M4A1 tank by local ordnance units so the camouflage paint between the launcher and tank do not match. The Fifth Army T40 launchers were modified by attaching the pivoting elevating arm to a new fixture on the gun mantlet which permitted the gun to fire. This fixture was left in red lead primer. The M4A1 is painted in the usual 1944 Fifth Army scheme of bands of black painted over the usual olive drab finish. No registration number is evident, but it is probably covered by dust.



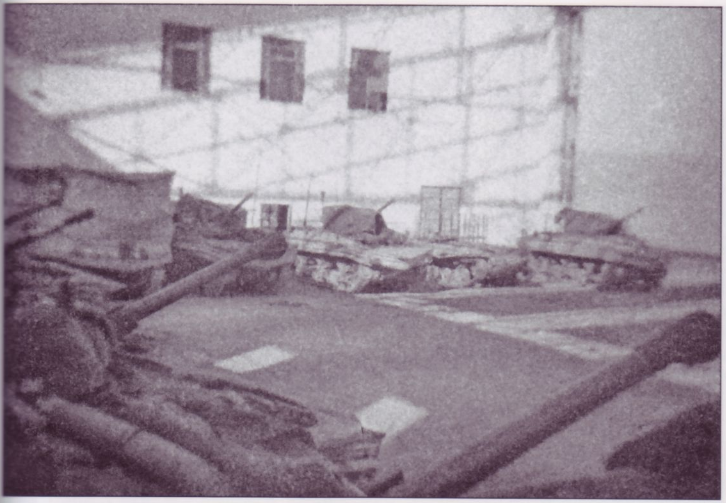
M4A1 with Modified M17/4.5 inch Rocket Launcher, Co. A, 760th Tank Battalion, Italy, March 1945

The T40/M17 Whiz-Bang rocket launcher proved so troublesome in use in Italy in the autumn of 1944 that local ordnance units developed a fix using 4.5 inch aviation rockets. The roof of the M17 launcher was removed, the front door welded open, and 54 aircraft rocket launch tubes in triple bundles were mounted on the launcher frame. These improvised launchers were used by the 752nd and 760th Tank Battalions. This tank is named "Arlene III" and is painted in the usual black over olive drab finish common in the US Army in 1944-45.

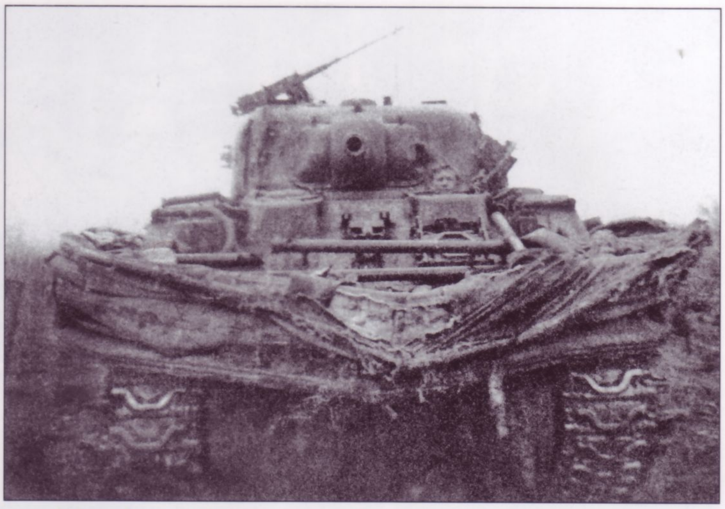


Leaflet Night-fighting Tank, 738th Tank Battalion (SMX), Remagen, Germany, March 1945

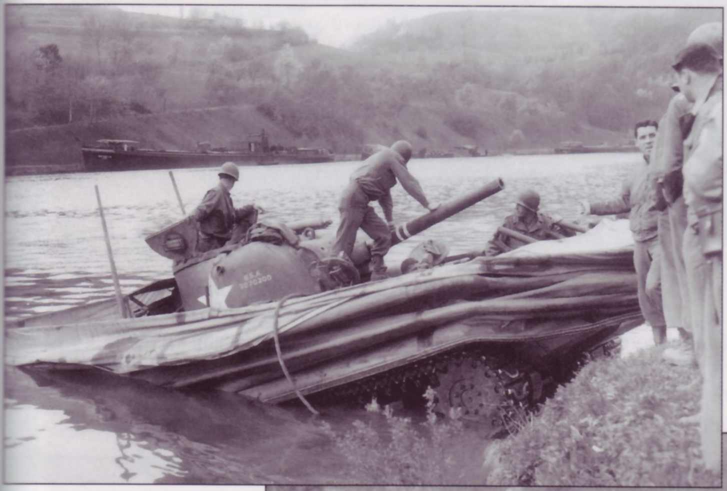
Small numbers of Leaflet night-fighting tanks were pulled out of moth-balls in the spring of 1945 to help protect Rhine river crossing sites from night attacks by German frogmen and assault boats. Due to the secrecy attached to the program, the markings on these tanks were usually non-existent or limited to Allied stars on the upper surfaces and stenciling on the sides. This example is in the usual plain olive drab finish.



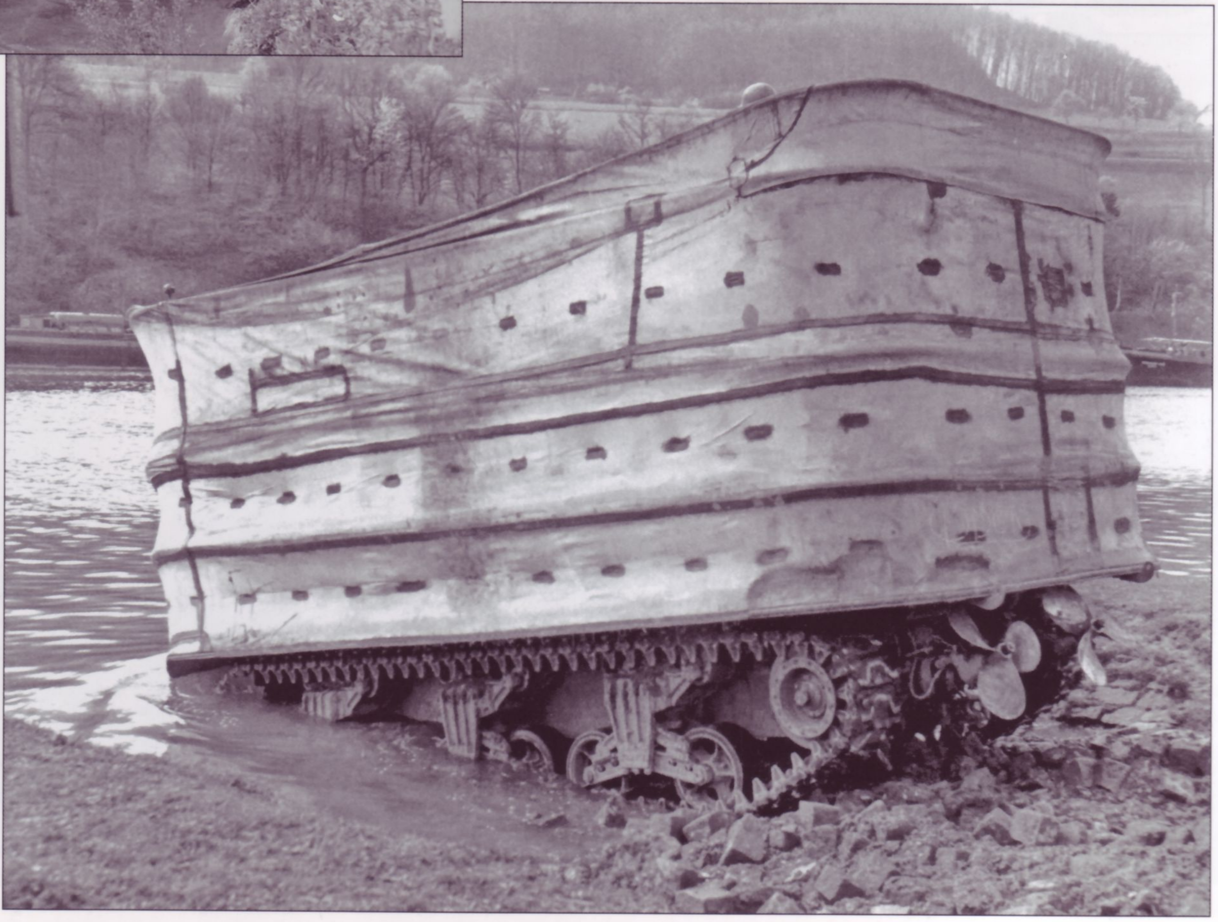
Although not the best quality, this photo provides a rare glimpse of a depot for 736th Tank Battalion with Sherman DD tanks. The turret-less DD tank second from the right is a rare US Army Valentine DD tank used for training.



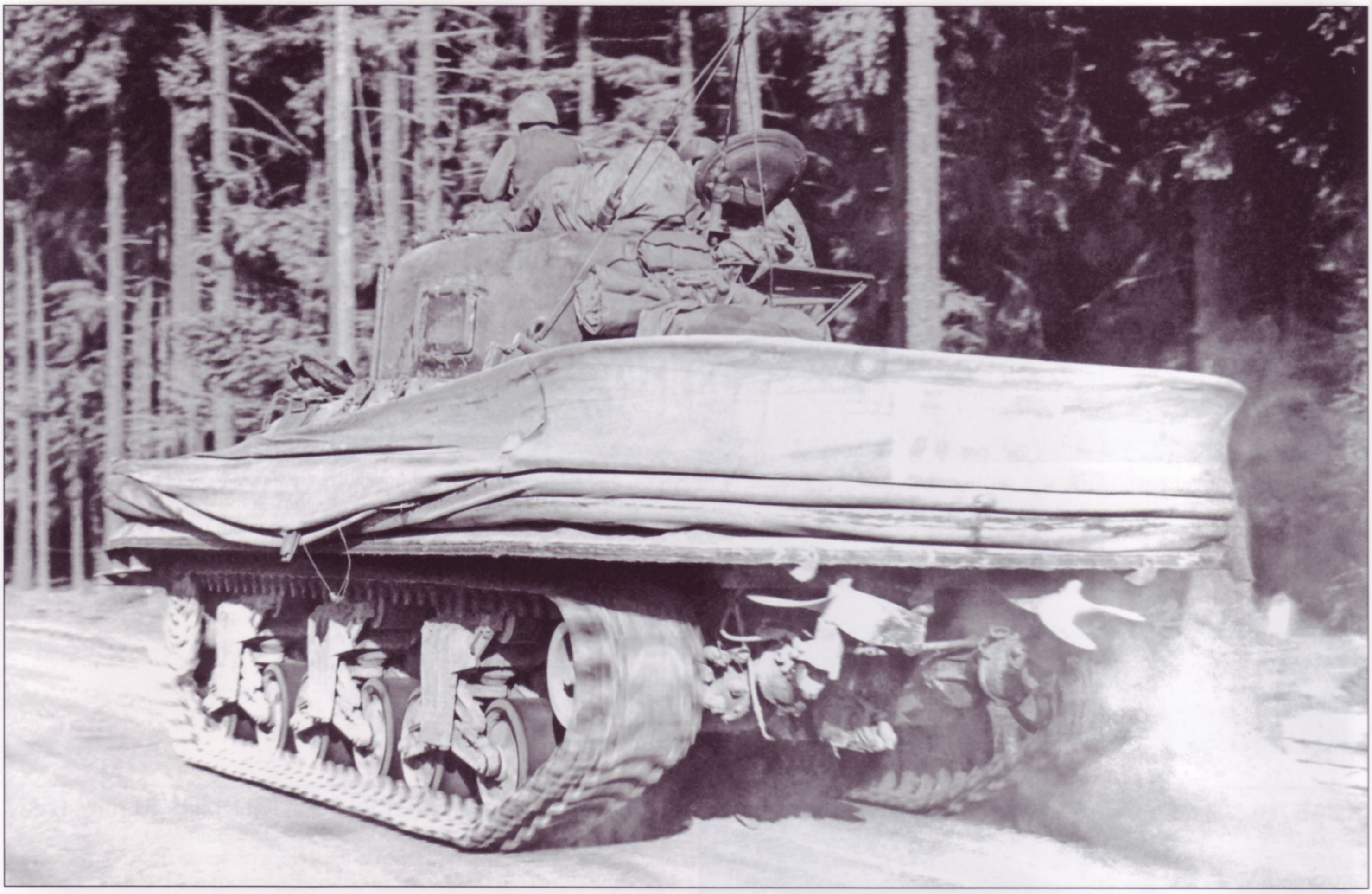
Although not of the best quality, this is a rare view of a Sherman III DD tanks (M4A2) of the 736th Tank Battalion. Some British DD tanks were provided to the US Army in January 1945 to make up for shortages of the American built M4A1 DD tanks. Note for example the British smoke mortar fitting on the turret side and the British pattern track stowage on the hull front. This unit was one of the few US units to use the British DD tanks in combat.



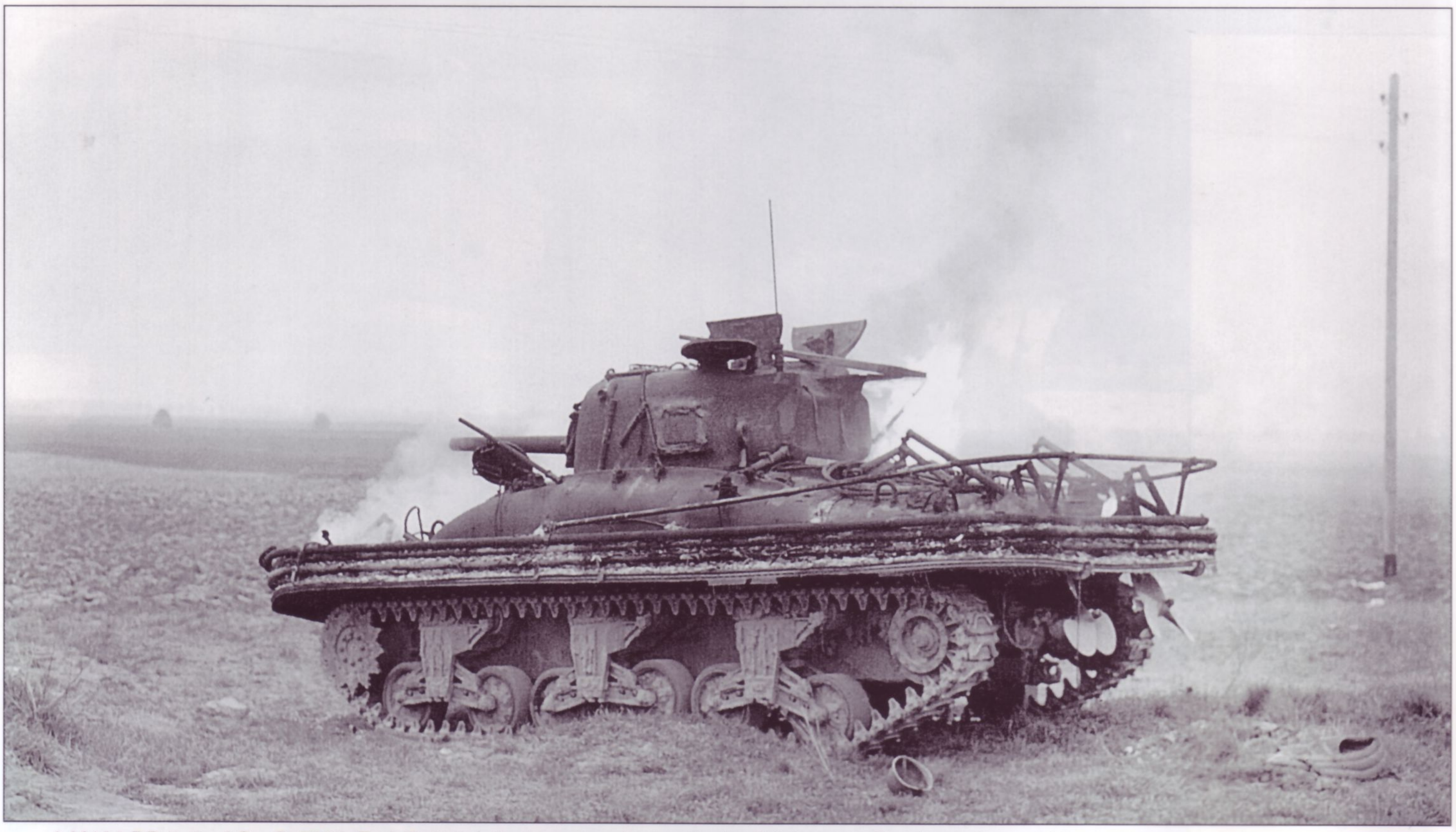
A M4A1 DD tank comes ashore during practice exercises by the 781st Tank Battalion along the Neckar river on 30 April 1945.



A nice view of a DD Donald Duck tank with the screens fully inflated on the Neckar river on 30 April 1945. This tank was part of the 781st Tank Battalion of the Seventh Army which trained on amphibious tanks but never used the DD tanks for river crossing operations in combat.

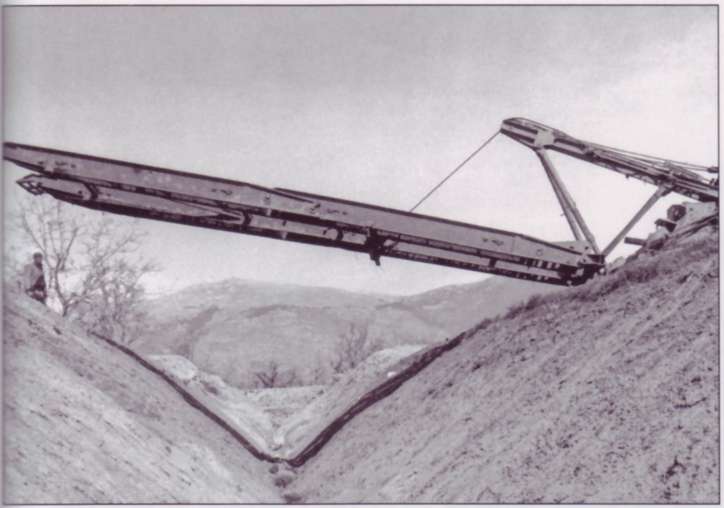


An interesting rear view of a M4A1 DD tank with Patton's Third Army near Braunshorn on 24 March 1945 during the Rhine crossing operations showing the propellers folded up in travel position. This particular tank has extended end connectors fitted to the track, and also has been modernized by the substitution of an all-around vision cupola instead of the usual split commander's hatch. Barely evident on the rear of the screen is a faded A-8 painted on a white square. This style of marking was common on M4A1 DD tanks on D-Day, and this may very well be a survivor.

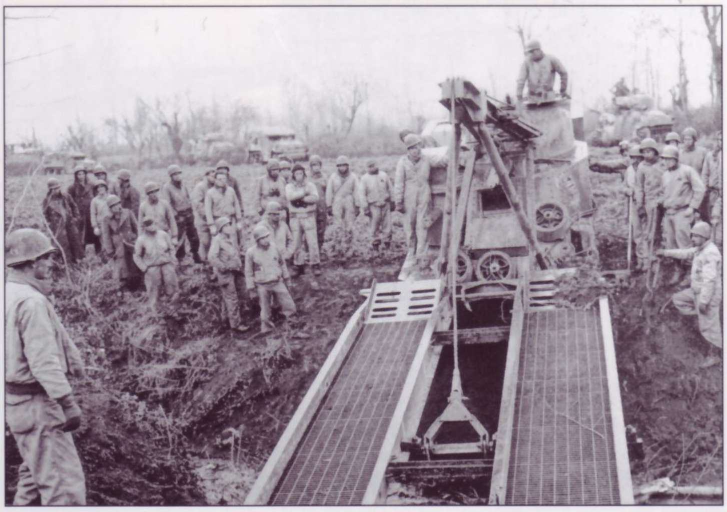


A M4A1 DD tank of Co. C, 736th Tank Battalion that was knocked out in the fighting near Frankenthal on 26 March 1945. It provides some details of the reinforcing struts used to keep the screen erect.

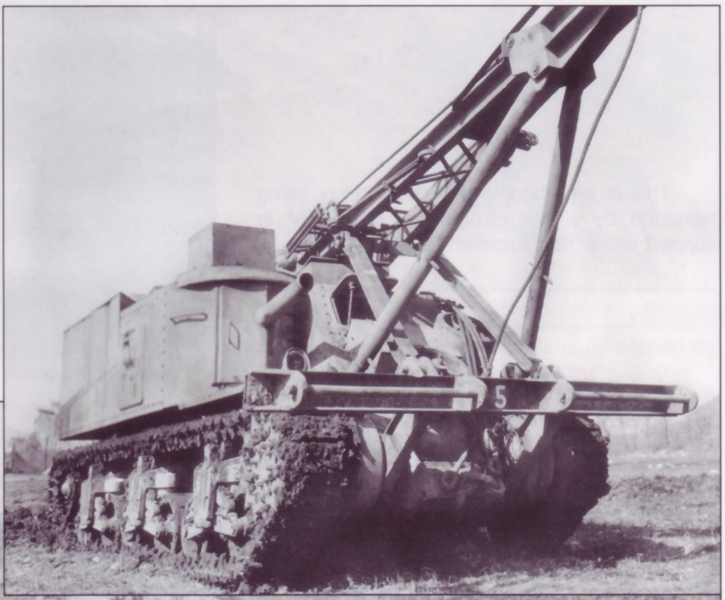
Bridging Tanks



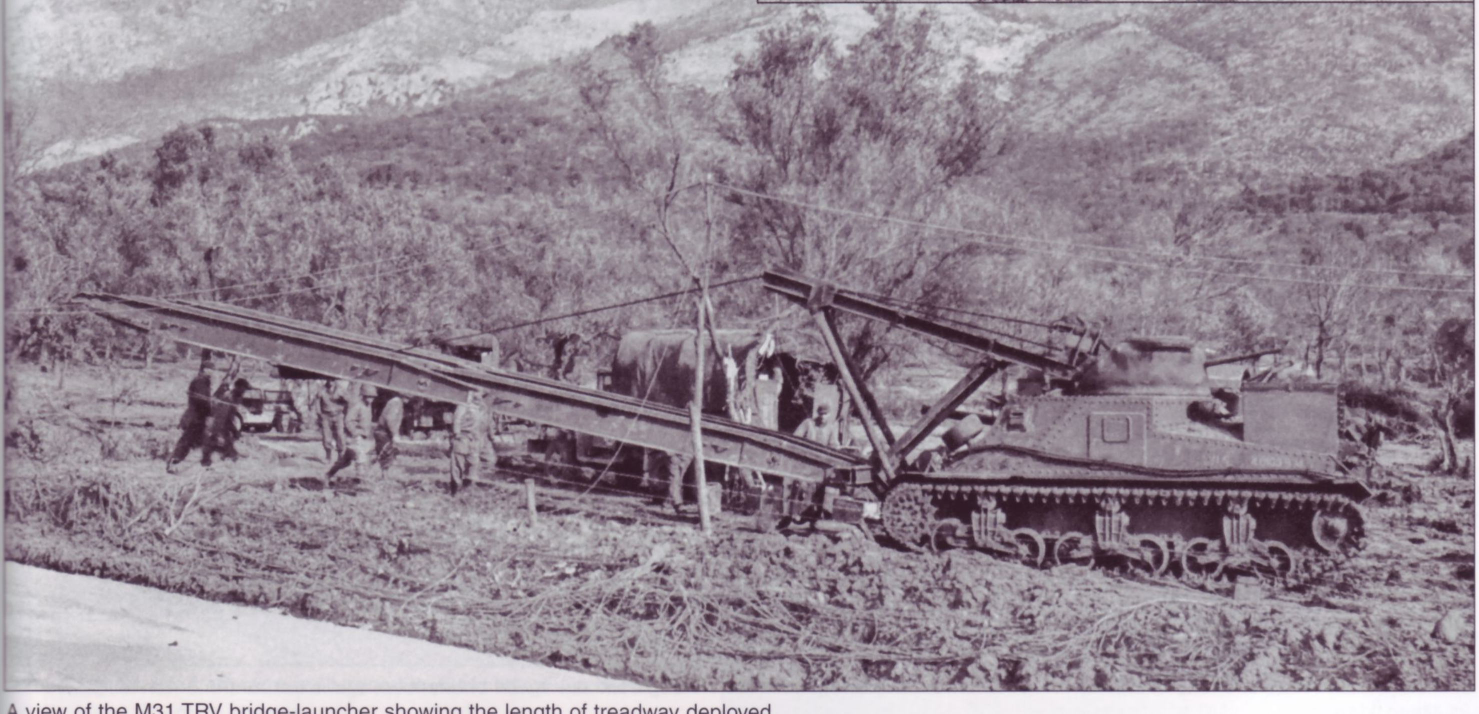
The earliest known efforts to deploy a bridge-laying tank were by the 16th Engineers of the 1st Armored Division in Italy. In February 1944, they developed a system to launch a length of treadway bridge over German anti-tank ditches using a M31 TRV as the carrier.



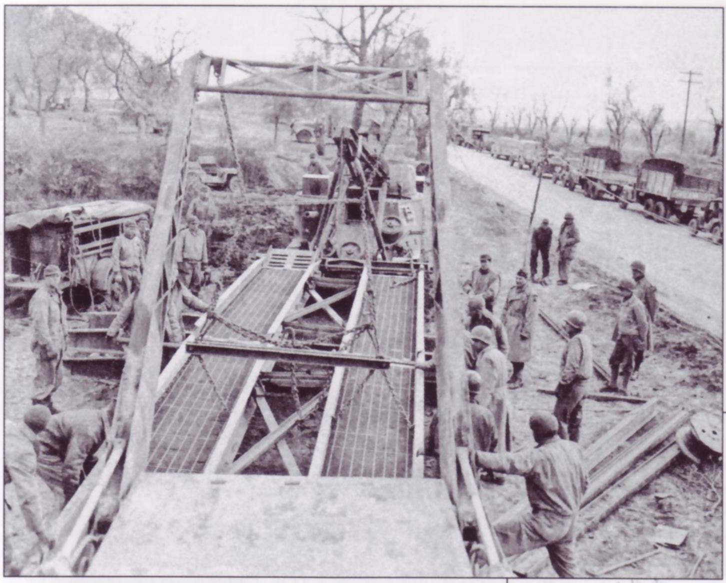
This shows the method used by the 16th Engineers to use the M31 TRV's winch for lowering the treadway bridge into position. This photo was taken during the trials near Mignano, Italy on 28 February 1944.



This view of the M31 TRV without the bridge shows the configuration of the special hinge fitted to the front of the vehicle for attaching the bridge.

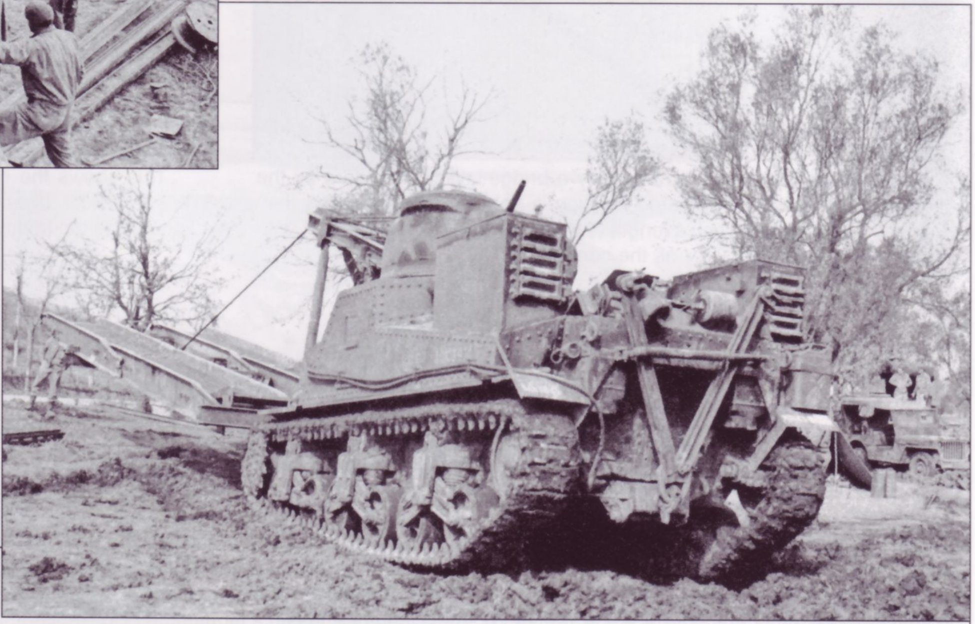


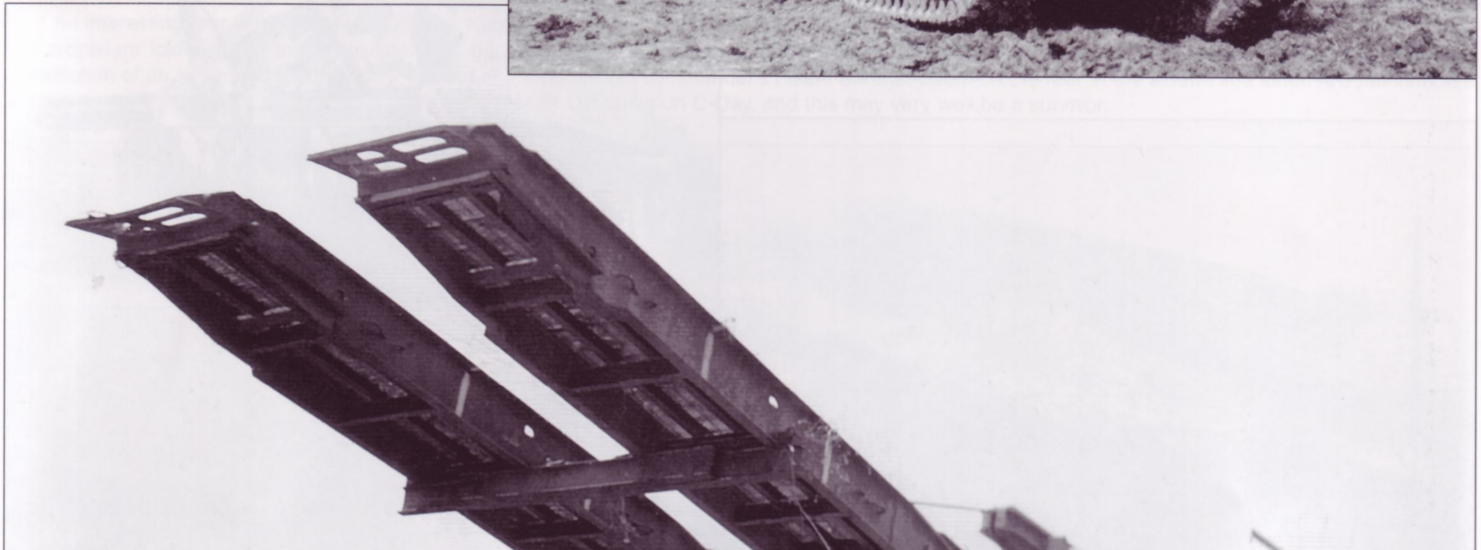
A view of the M31 TRV bridge-launcher showing the length of treadway deployed.



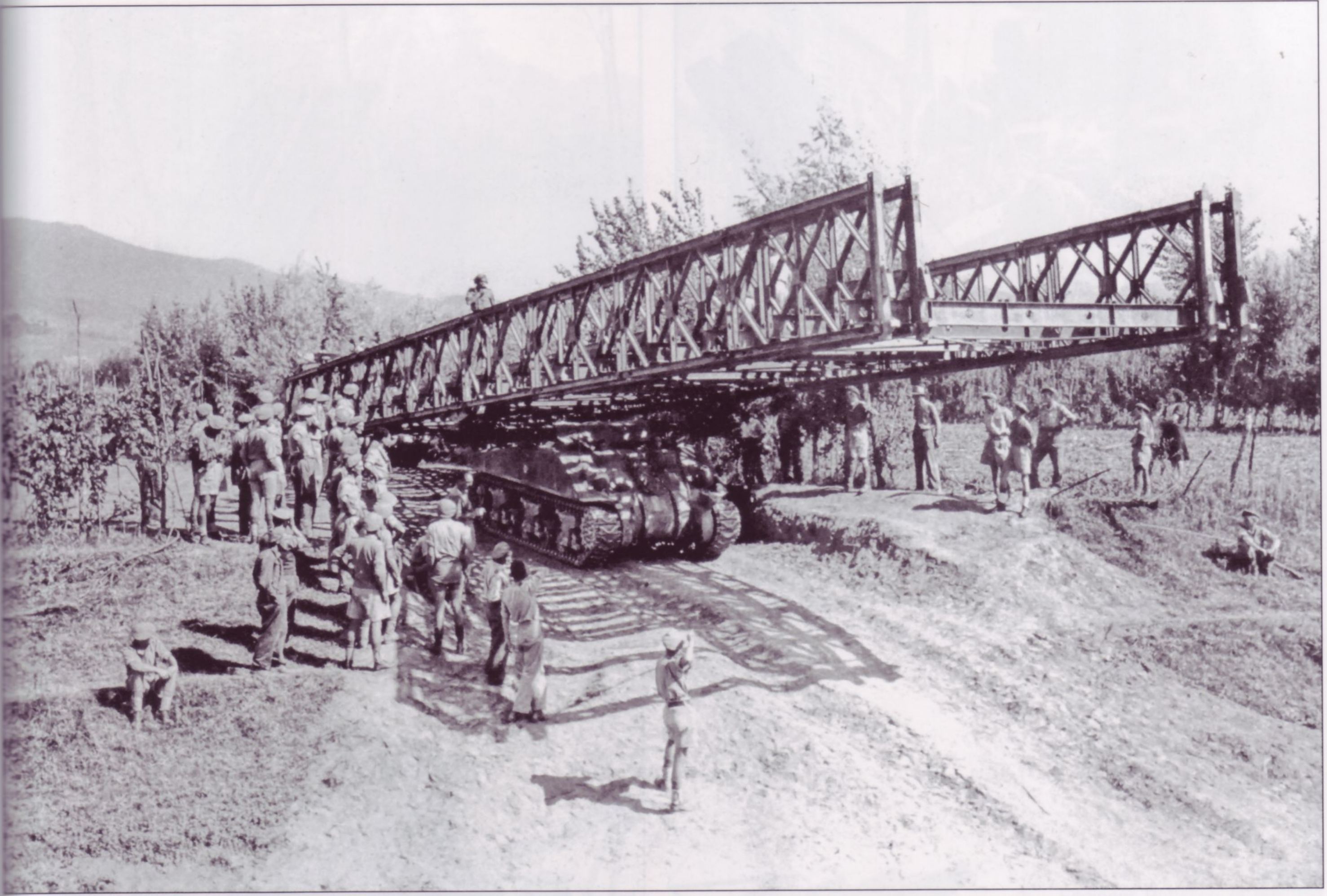
As can be seen here, a standard Brockway B666 bridging truck was used to help attach the treadway section to the M31 TRV.

This is an example of the treadway being launched by a 16th Engineers M31 TRV in support of the 13th Armored Regiment.

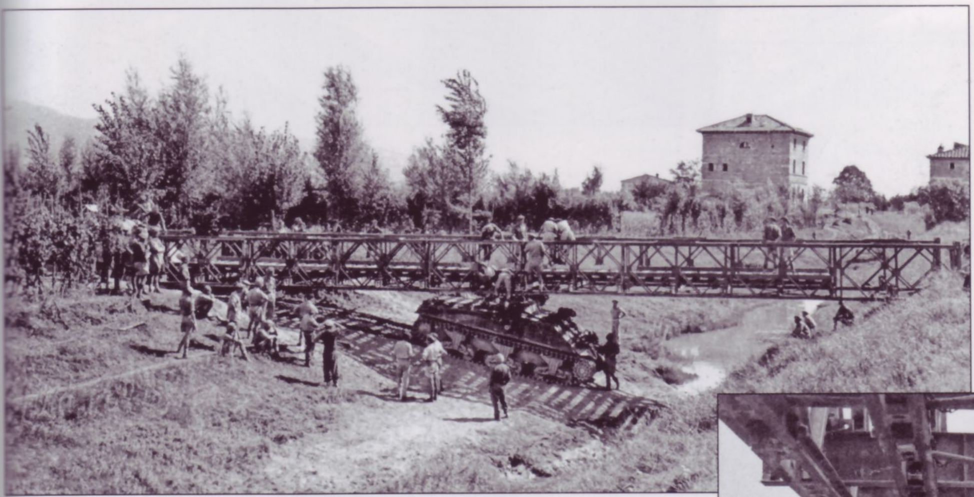




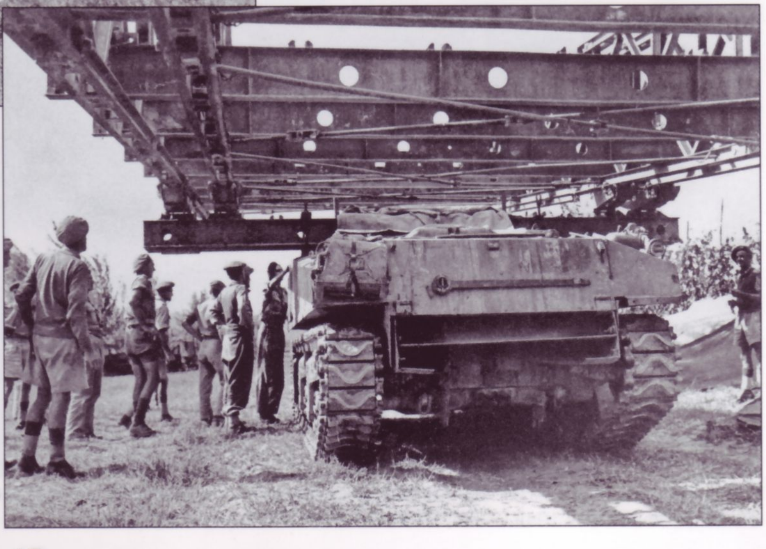
Here is an example of one of the 16th Engineers treadway bridge-launchers being used during the break-out operations from the Anzio bridgehead on 25 May 1944.



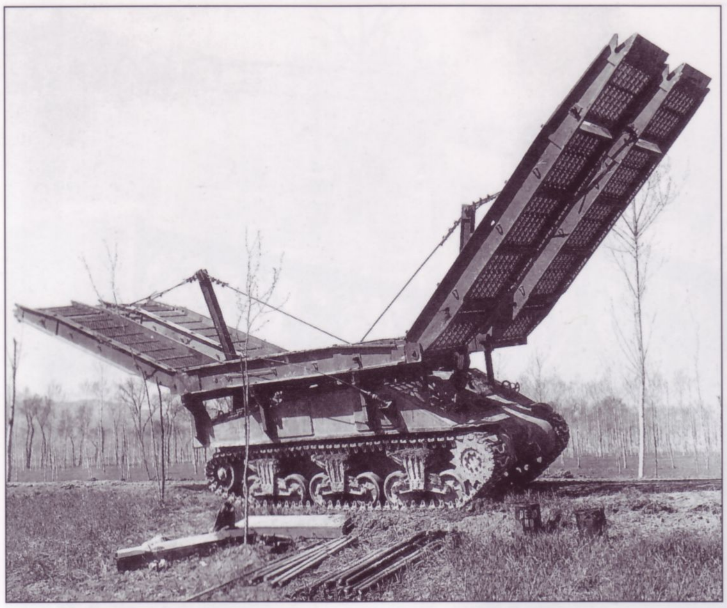
Allied forces in Italy made a number of attempts to develop bridge-laying tanks to cross German anti-tank ditches. The Canadians developed the Plymouth Bailey bridge launcher on top a Sherman. Here is being displayed to Allied officers near Pistoia on 26 September 1944.



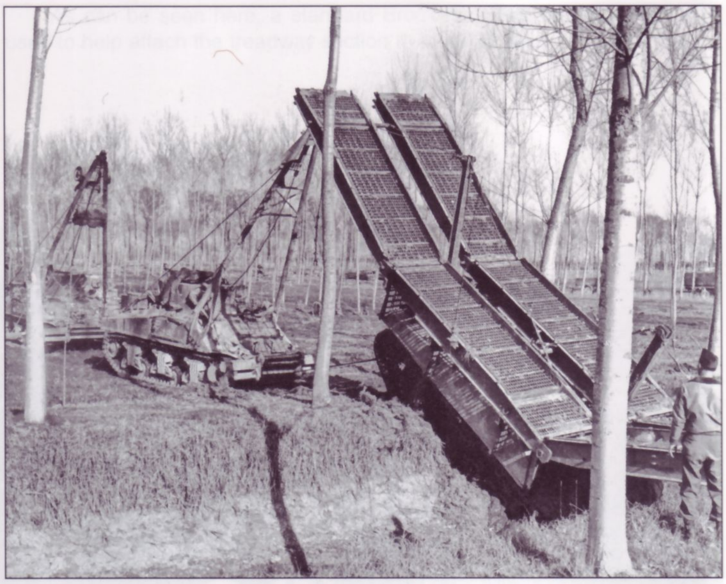
This shows the configuration of the Plymouth bridge across the gap after the Sherman has driven into the gully.



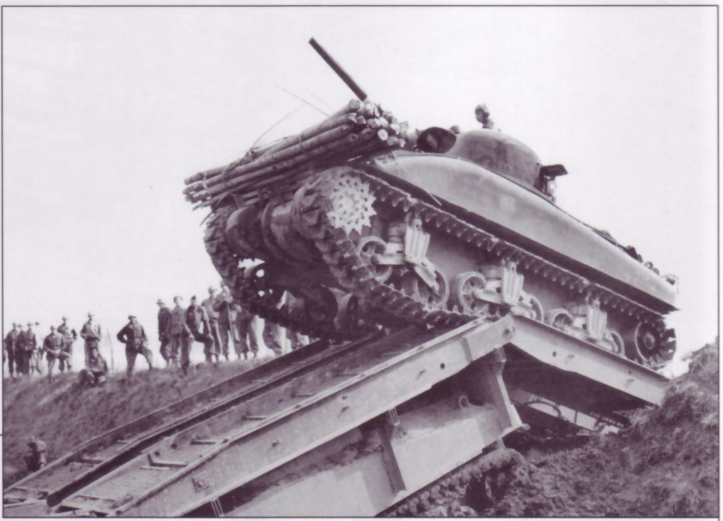
This rearview of the Bailey bridge-layer shows how it was mounted on the M4A4 Sherman chassis.



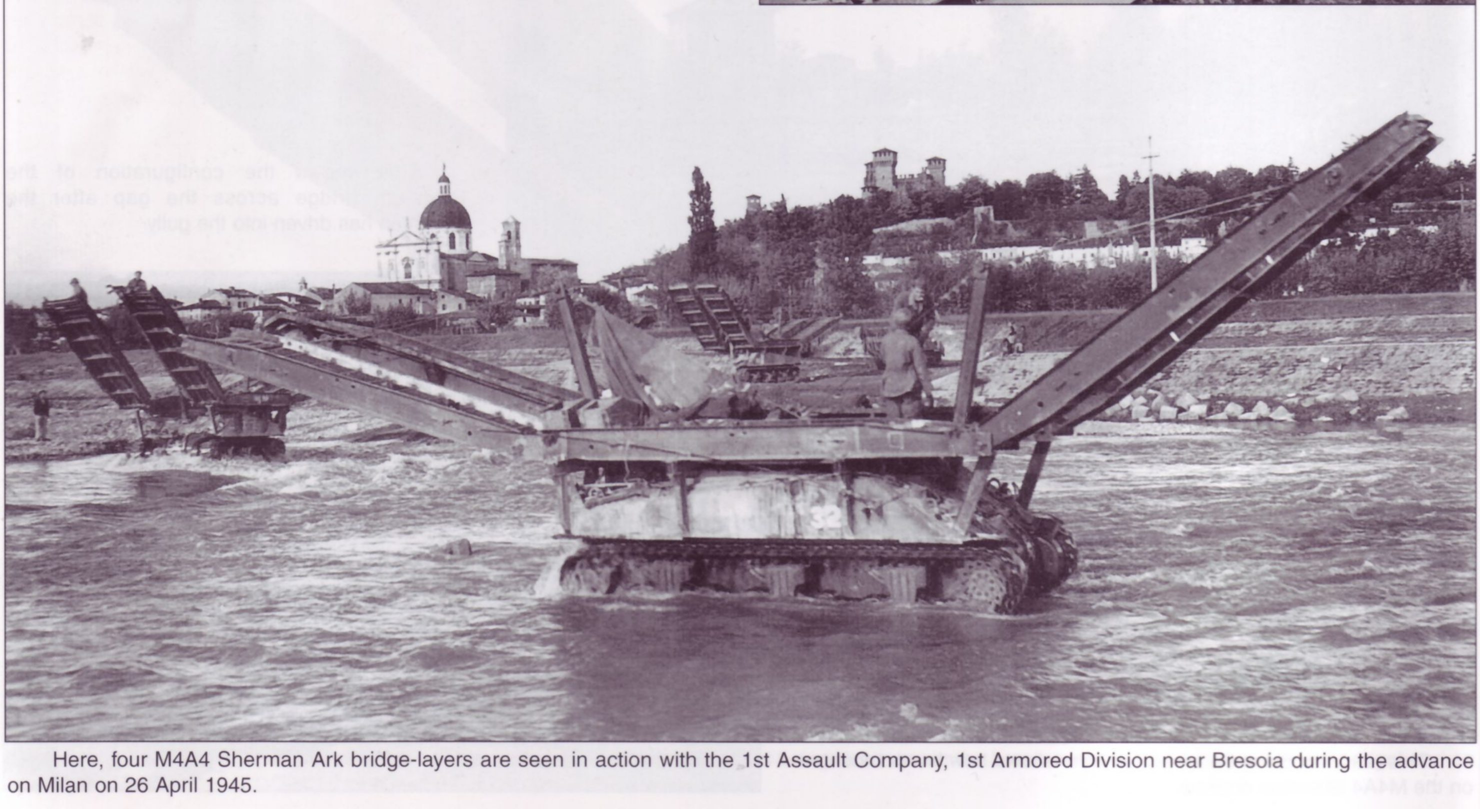
The British developed the idea of mounting treadway bridge on the top of turret-less tank hulls, first on the Churchill Ark. Another approach in Italy was to mount it on top of a turret-less Sherman hull this one was seen on display on 29 March 1945 during operations in northern Italy.



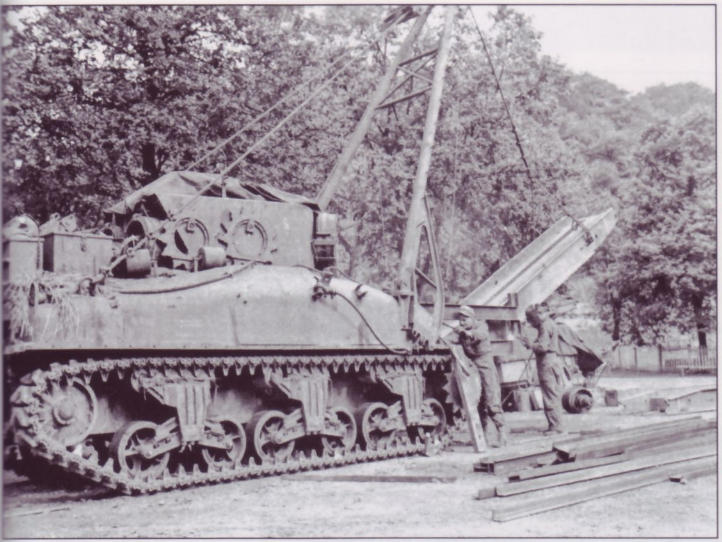
This photo shows the treadway layer deploying the bridge in a gap with the assistance of M32 TRVs during trials near Pranto, Italy on 18 March 1945.



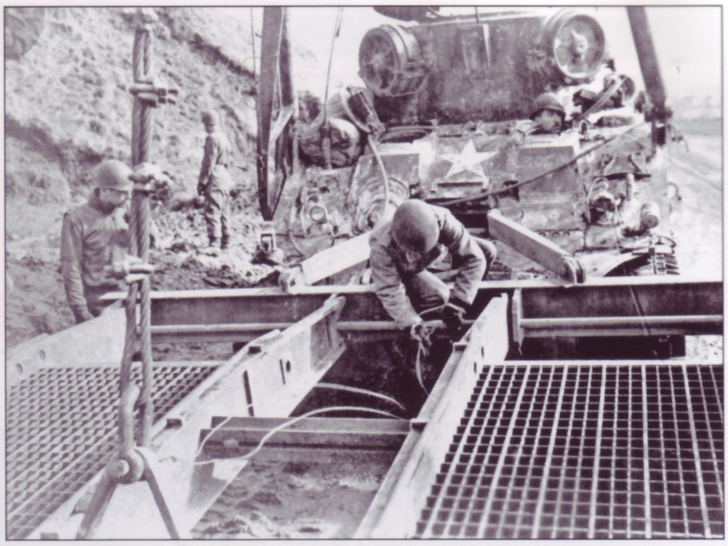
A M4A1 with fascine is driven over the treadway bridge during trials near Pranto, Italy on 18 March 1945.



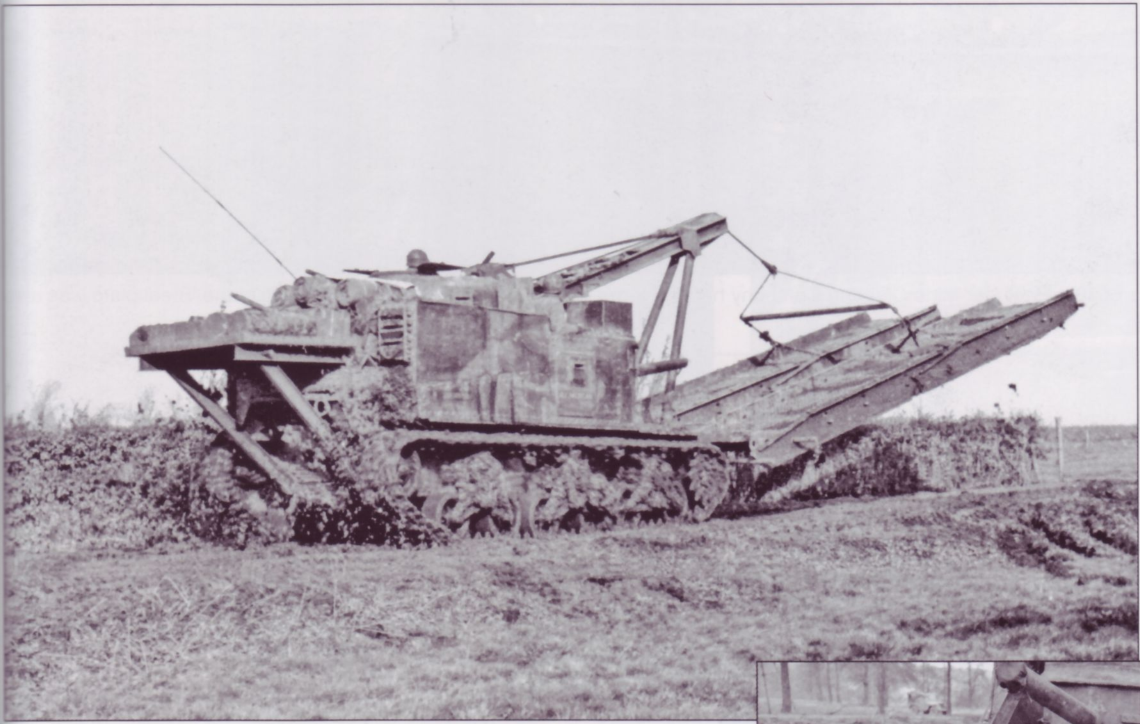
Here, four M4A4 Sherman Ark bridge-layers are seen in action with the 1st Assault Company, 1st Armored Division near Bresoia during the advance on Milan on 26 April 1945.



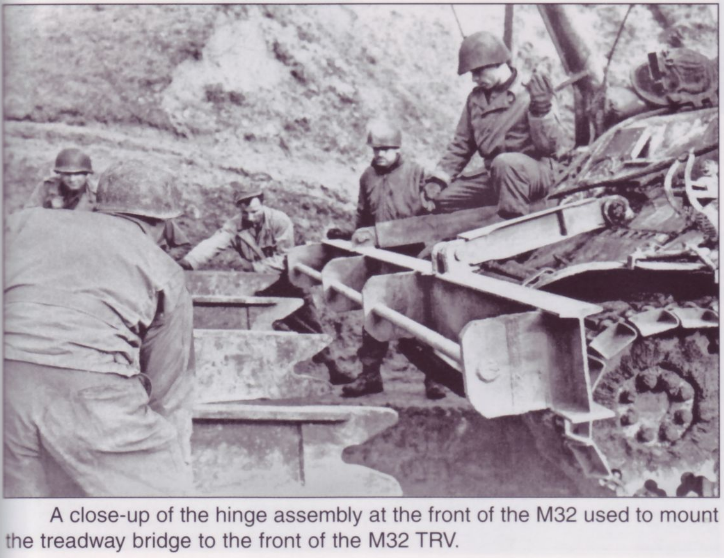
This M32B1 of the 712th Tank Battalion has been adapted to carry a length of treadway bridge on the front. This field conversion was undertaken for use in crossing moats protecting the fortresses near Metz during the fighting there in October 1944.



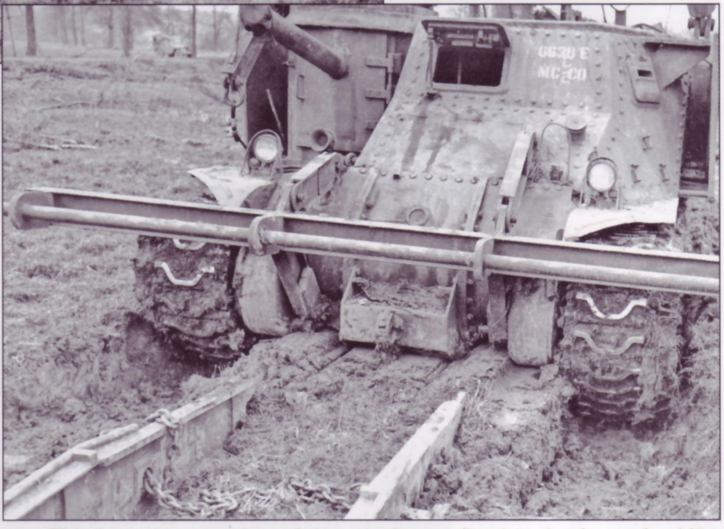
Here the crew of a M32 TRV of the 22nd Engineer Battalion, 5th Armored Division attach a section of M2 treadway bridge to the hinge assembly at the front of the vehicle during operations near Hoensbruck, Netherlands on 21 February 1945.



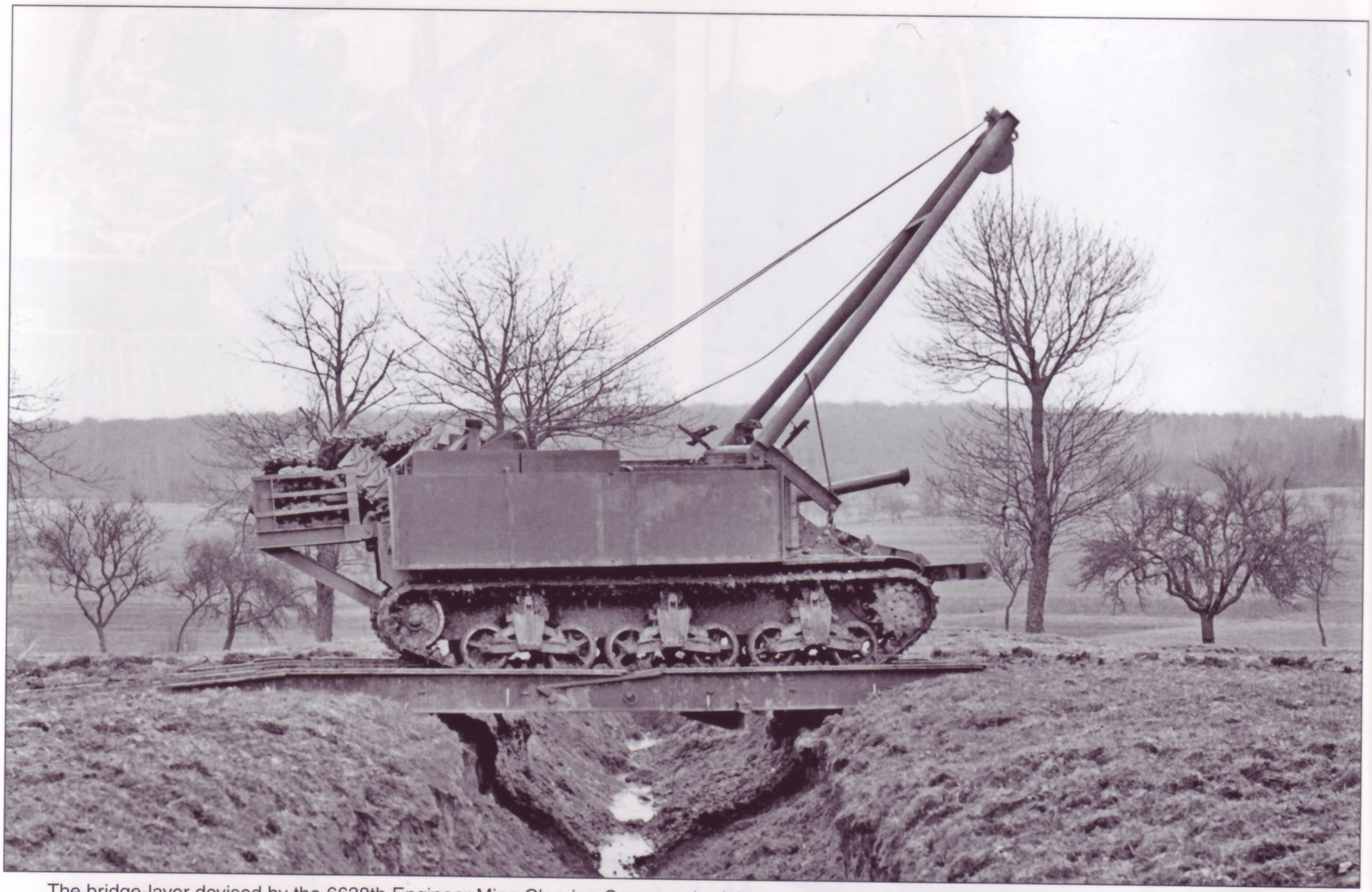
The 17th Armored Engineer Battalion of the 2nd Armored Division built a small number of treadway bridgelayers to bridge German anti-tank ditches at the outset of the 16 November 1944 offensive towards the Roer. This one is in use near Beggendorf. The Engineers added a porch over the rear with counterweights to balance the weight of the bridge on front of the vehicle.



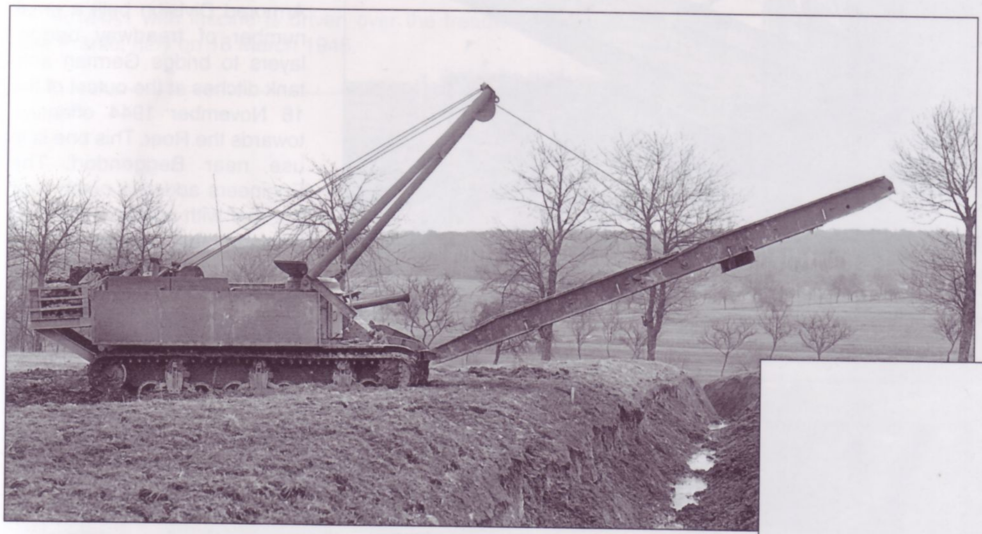
A close-up of the hinge assembly at the front of the M32 used to mount the treadway bridge to the front of the M32 TRV.



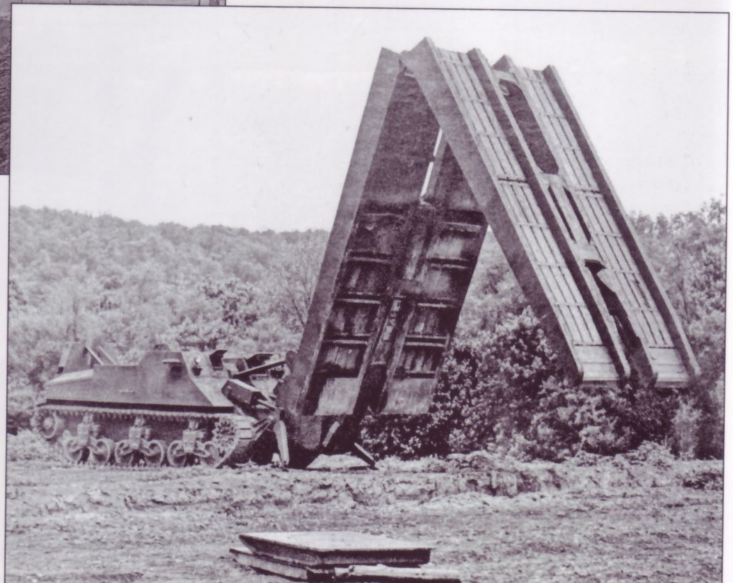
This is a close-up view of the attachment fitted to the front of a M31 treadway bridge launcher near Badonviller, France on 3 March 1945. This particular configuration was undertaken by the 6638th Engineer Mine Clearing Company, the jack-of-all-trades specialist armor unit of the US Seventh Army. Note that the M31 is turret-less.



The bridge-layer devised by the 6638th Engineer Mine Clearing Company had the turret removed and replaced by a new jib crane. Steel plate was also attached over the hull sides.

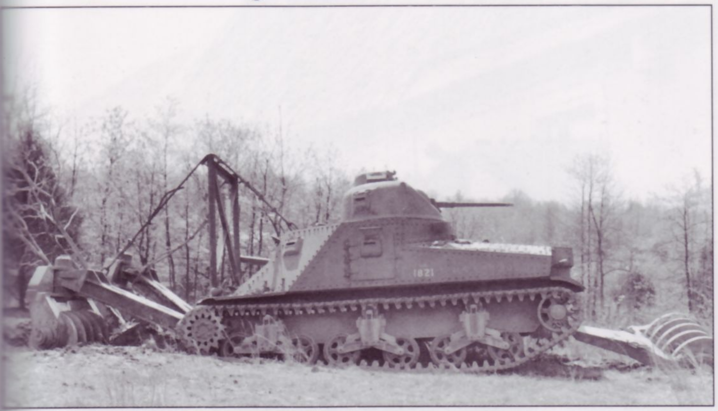


The treadway bridgelayer of the 6638th EMCC is seen here during this attempt to breach a gap on 3 March 1945.

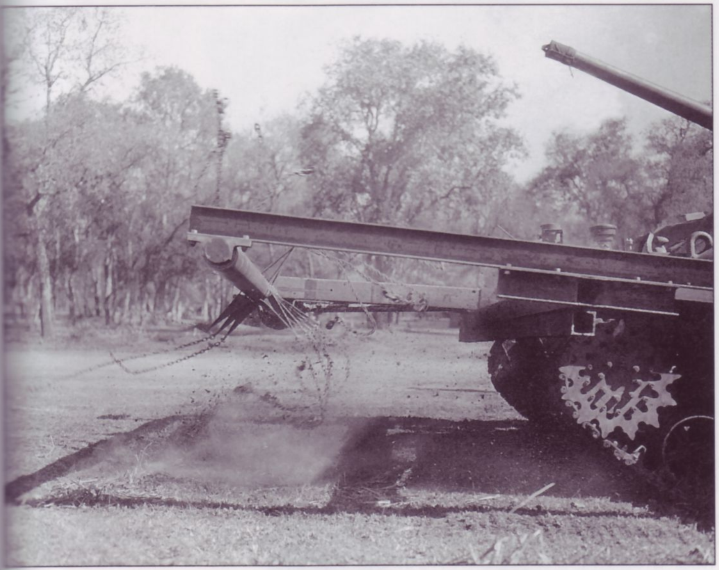


During the war, the US Engineers did develop a Self-Launching Scissors Bridge, this example being the hydraulically operated type developed by Daybrook Hydraulic Corporation. Although there were plans to deploy these experimentally in 1945, this did not take place.

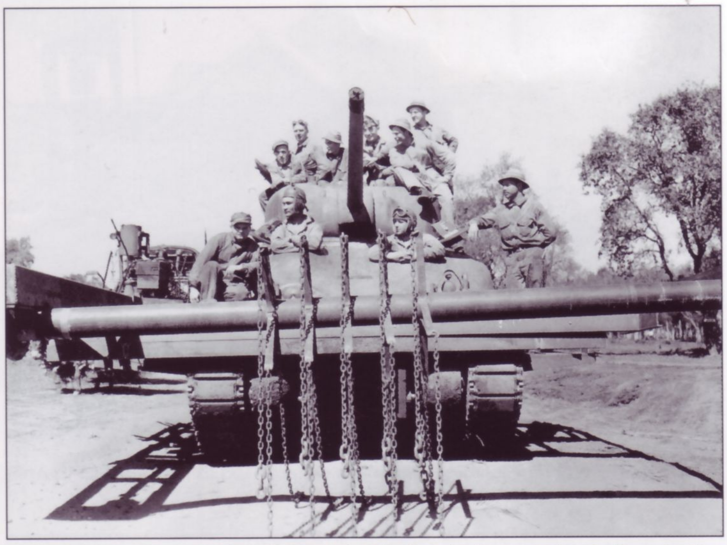
Mine Clearing Tanks



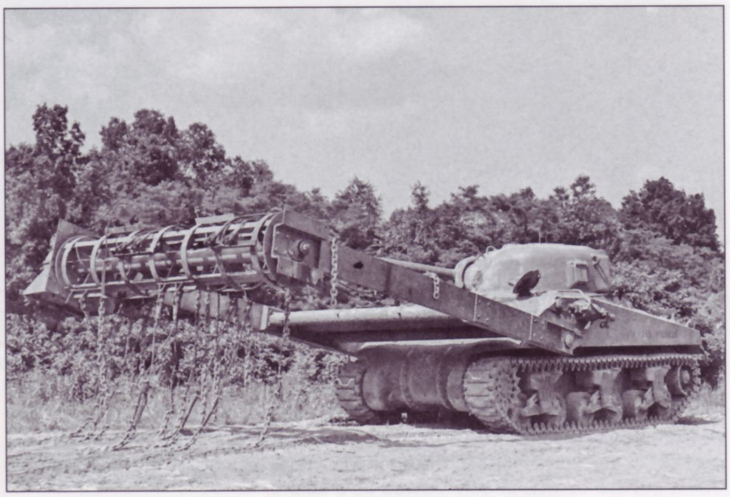
The US Army favored mine rollers over flails and this shows the original T1 mine exploder on trials at Ft. Knox, being pushed by a M3 medium tank. 1st Armored Division records indicate that 3 "mine crushers" on M3 medium tanks were operated by the division in Tunisia in the spring of 1943, and they may have been an experimental deployment of this type.



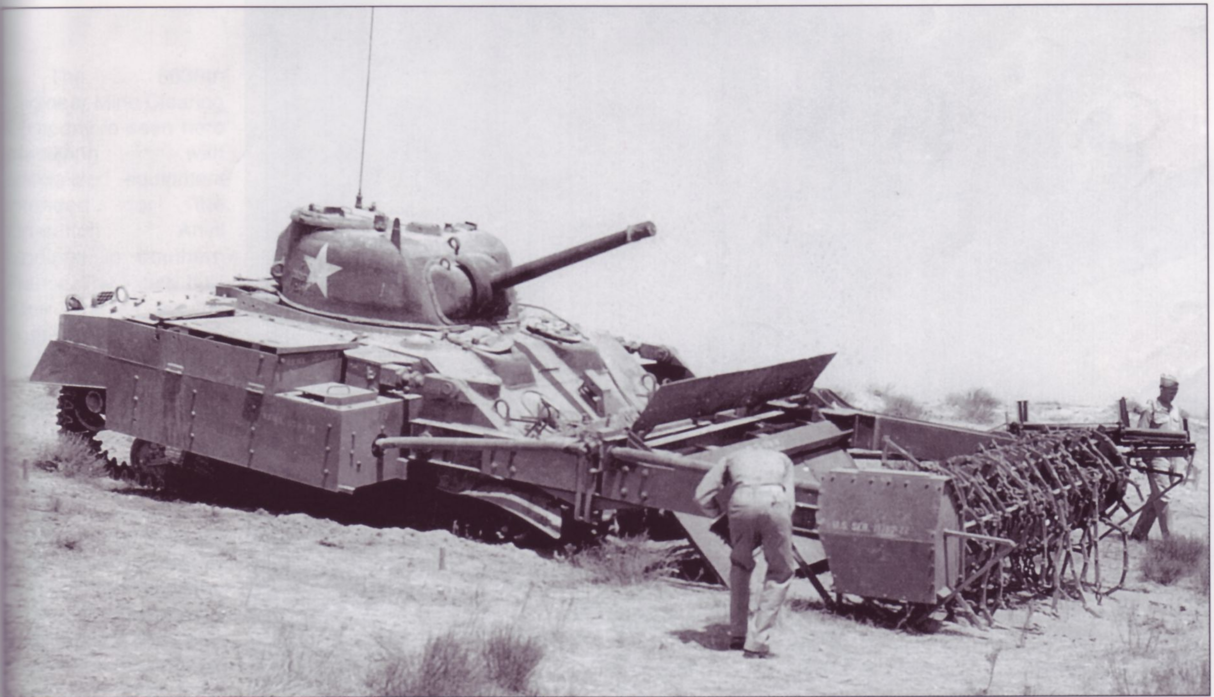
This is another view of the 89th Ordnance Battalion's improvised flail showing details of the flail assembly itself. It proved too flimsy, and the US Army copied the British Scorpion instead.



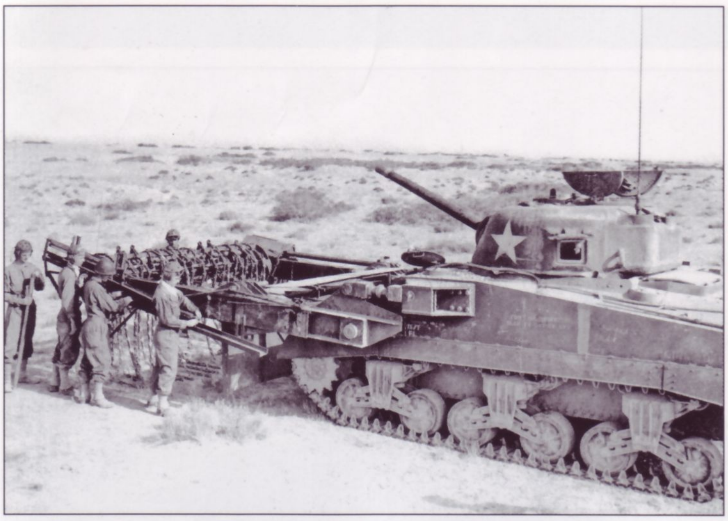
After having seen British Scorpion flail tanks in operation in Tunisia, the 89th Ordnance Battalion attempted to create its own version using a M4A1 medium tank in March 1943.



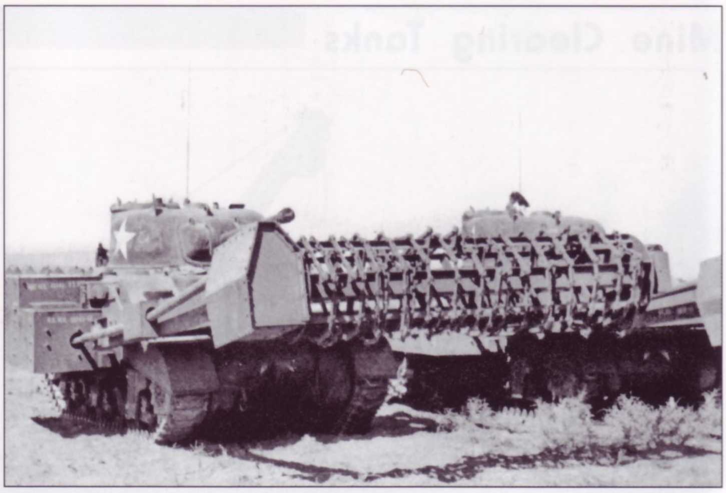
The US Army manufactured a copy of the British Scorpion flail tank as the T3 Mine Exploder and it is seen here during trials at Ft. Knox in early 1943.



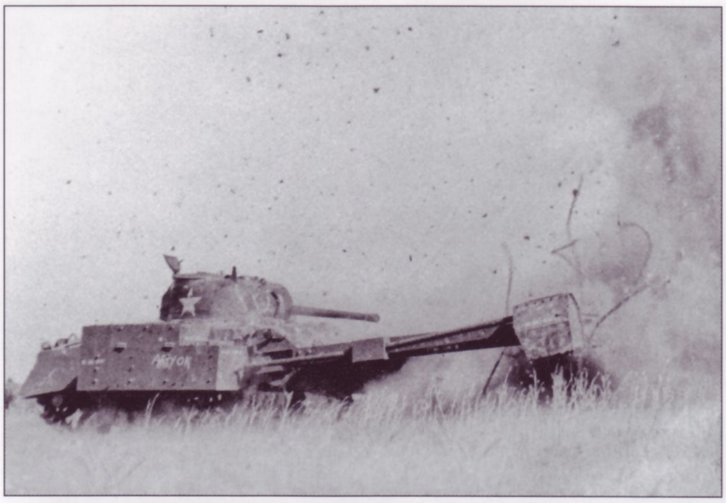
The T3 Scorpion Mine Exploder was similar to the British pattern though it differed in a number of technical details. This was one of the examples sent to Tunisia in the spring of 1943.



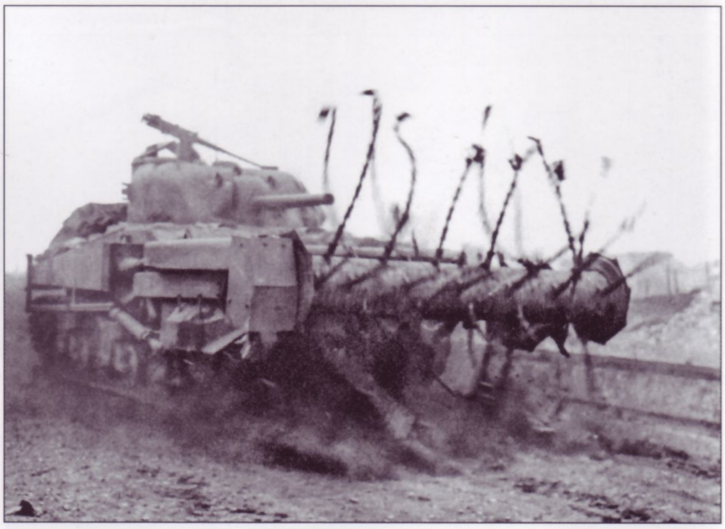
The first batch of T3 mine exploders was rushed to North Africa in April 1943.



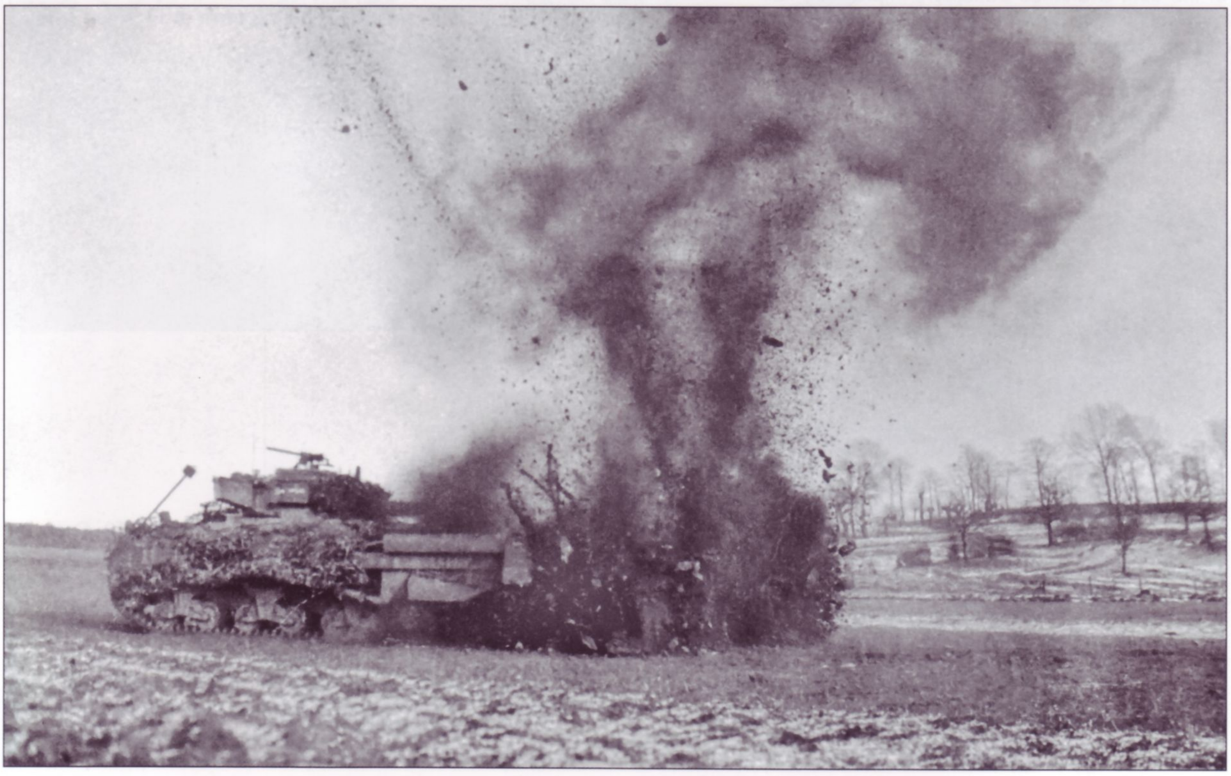
The T3 mine exploders shown here were tested in North Africa by the 6617th Engineer Mine Clearing Company which was formed on 21 August 1943 to operate new mine clearing equipment.



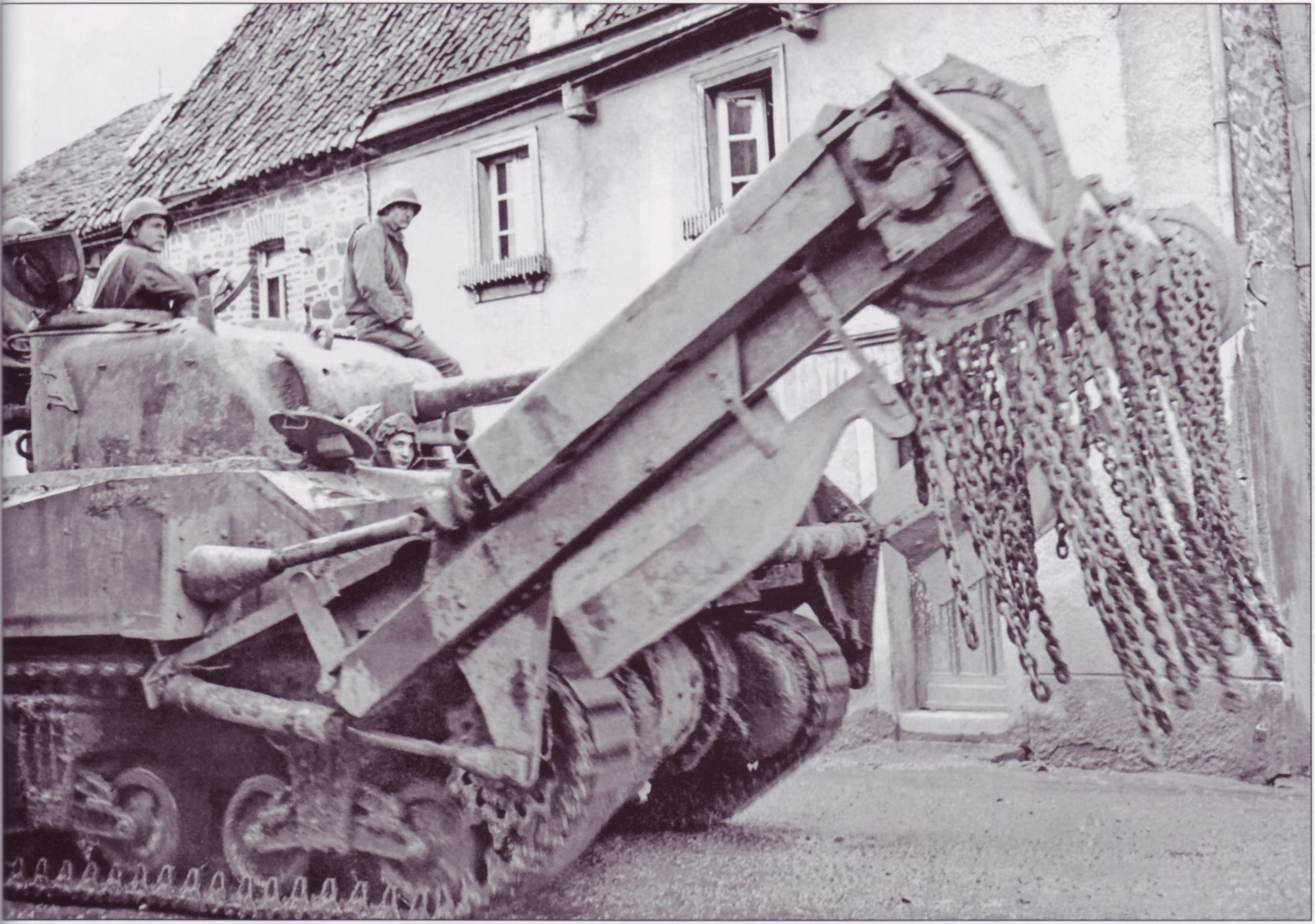
A T3 Scorpion during demonstrations in North Africa in July 1943. The 6617th Engineer Mine Clearing Company was deployed with the T3 in support of the 1st Armored Division in the Anzio beach-head in the spring of 1944, but the T3 was largely viewed as a failure.



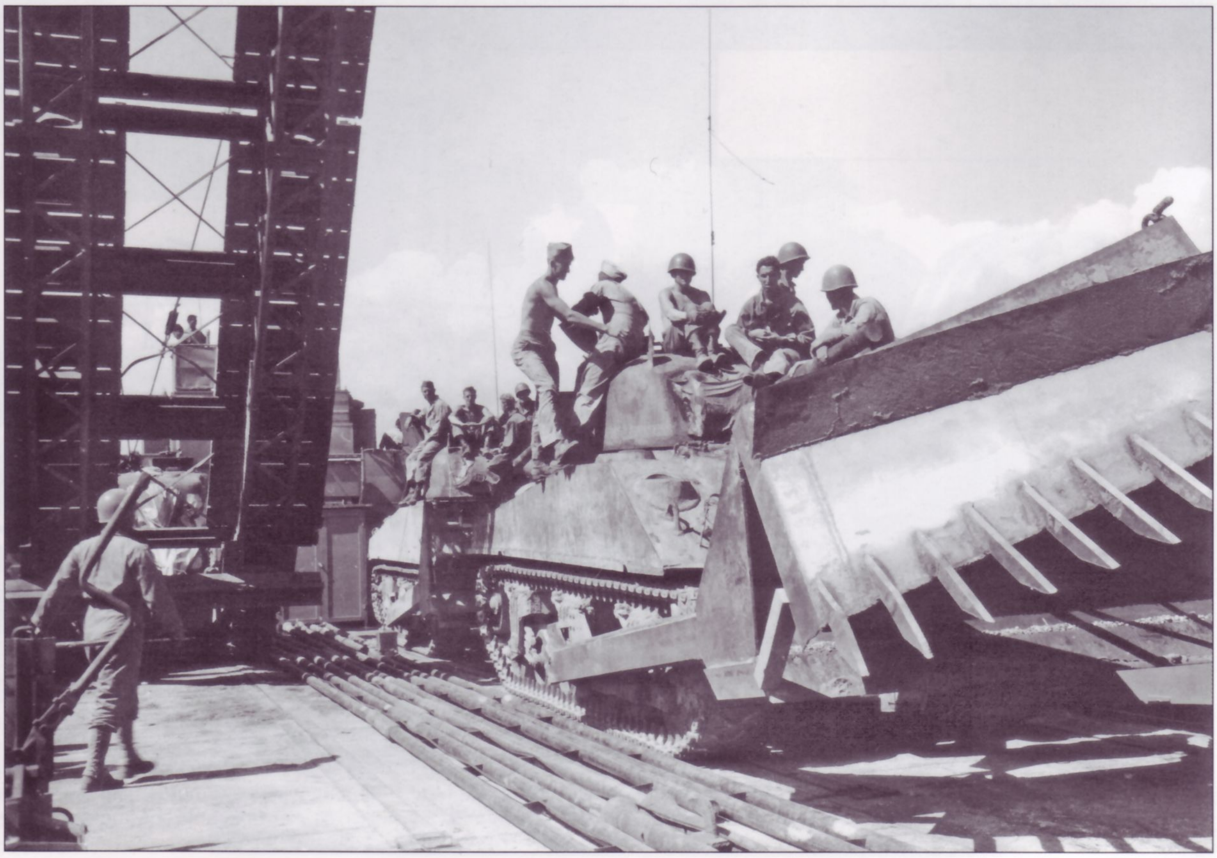
A shortage of US mine exploders led some US units to request the aid of British units. Here a British Crab flail tank supports the US 84th Division near Breinig, Germany on 11 October 1944.



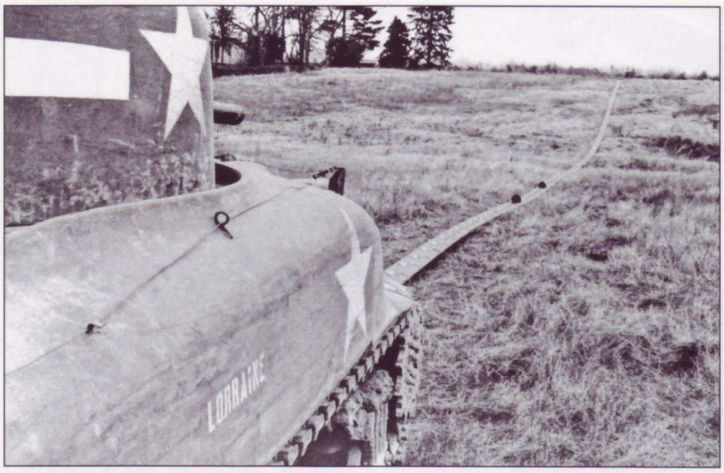
Here, a British Crab flail tank detonates a mine near Geilenkirchen while supporting the US XII Corps on Christmas day, 1944.



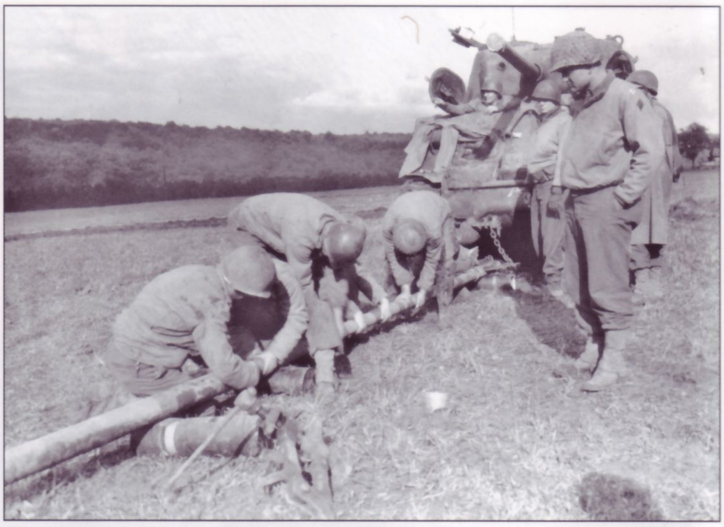
A small number of Crab flail tanks were obtained from British sources and served with 739th Tank Battalion (SMX). The Crabs were used in February and March in attempts to clear minefields on the approaches to the Roer and Rhine rivers and this one was seen near Vicht on the Roer river approaches on 21 February 1945.



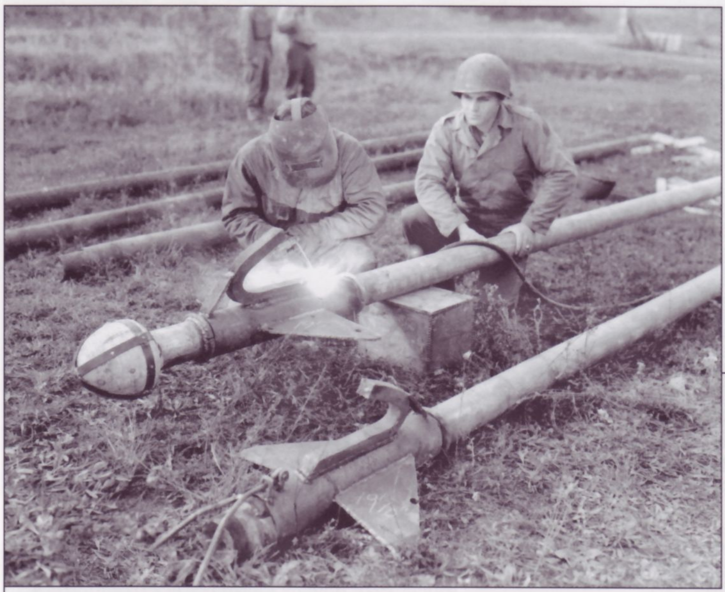
The 6638th Engineer Mine Clearing Company is seen here practicing with specialized equipment intended for the Operation Anvil landings in southern France. The locally built mine scarifier on the front of the M4A4 tank was improvised using a M1 dozer and was based on the T5 mine scarifier design. To the left is a Churchill with small box girder (SBG) bridge, one of three used by the Gapping Team of Alpha Force in support of the 3rd Infantry Division during the landings. The piping near the M4A4 is M2 demolition snake.



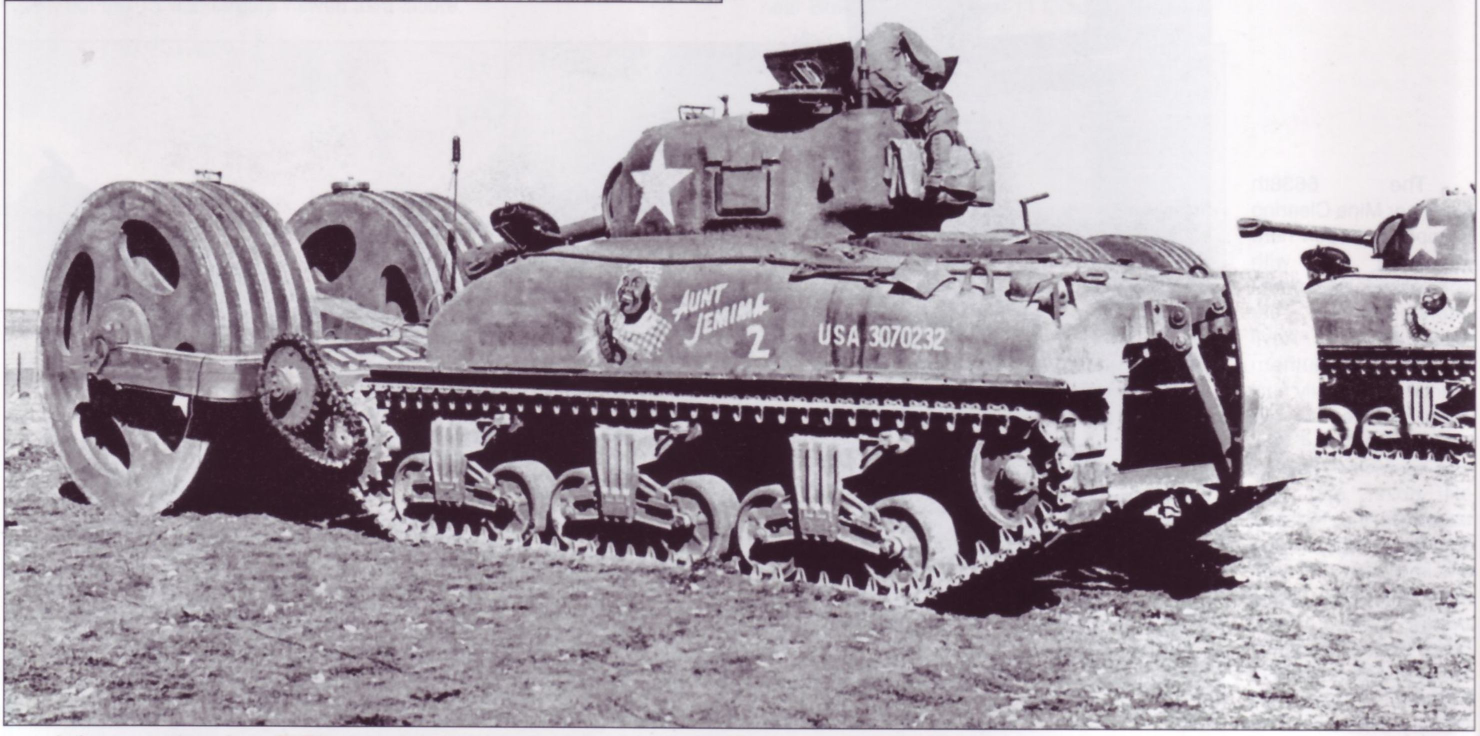
The M3 demolition snake was deployed in both Italy and France with little success. One is seen here during trials at Ft. Knox in 1943 on a M4A1 named “Lorraine”. It was filled with high explosive and designed to breach a minefield by concussion.



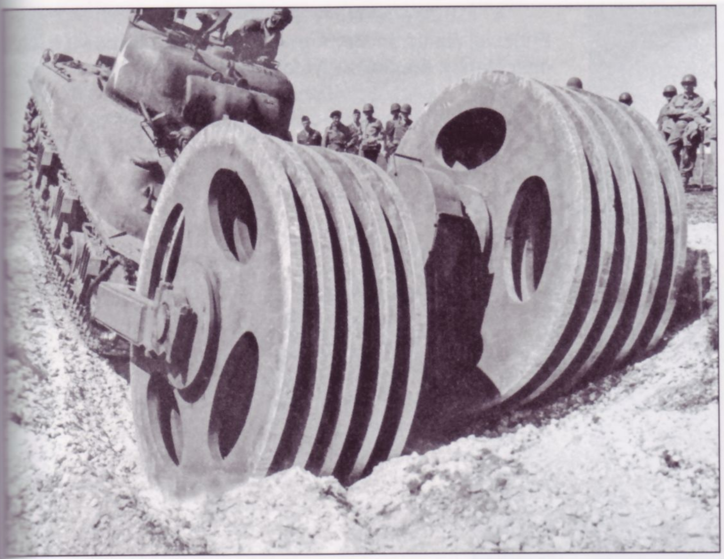
During the attempts by Patton’s Third Army to overcome the fortifications around Metz, the 735th Tank Battalion made one of the few uses of the demolition snake in combat. This consisted of up to four hundred feet of explosive-packed tubing that was pushed in front of the tank and detonated to blow gaps in minefields. Of the four Snakes pushed against Fort Driant on 31 October, three broke up on the approach to the fort, and the last failed immediately short of the fort. This shows the assembly of one of the Snakes on 2 October near Gorz.



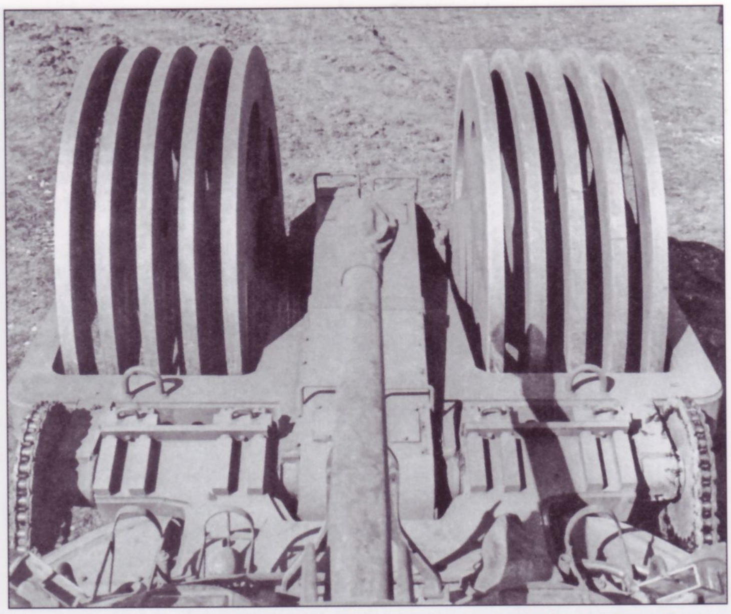
This shows the appearance of the front end of the demolition snake which is being welded on near Gorz, France on 2 October. The front section was intended to make it easier to push the demolition device in front of the tank, but the system proved to be very unwieldy. No Snakes were successfully used in the fighting, even though there were experiments in using Snakes to breach Dragon’s Teeth obstacles along the Siegfried line.



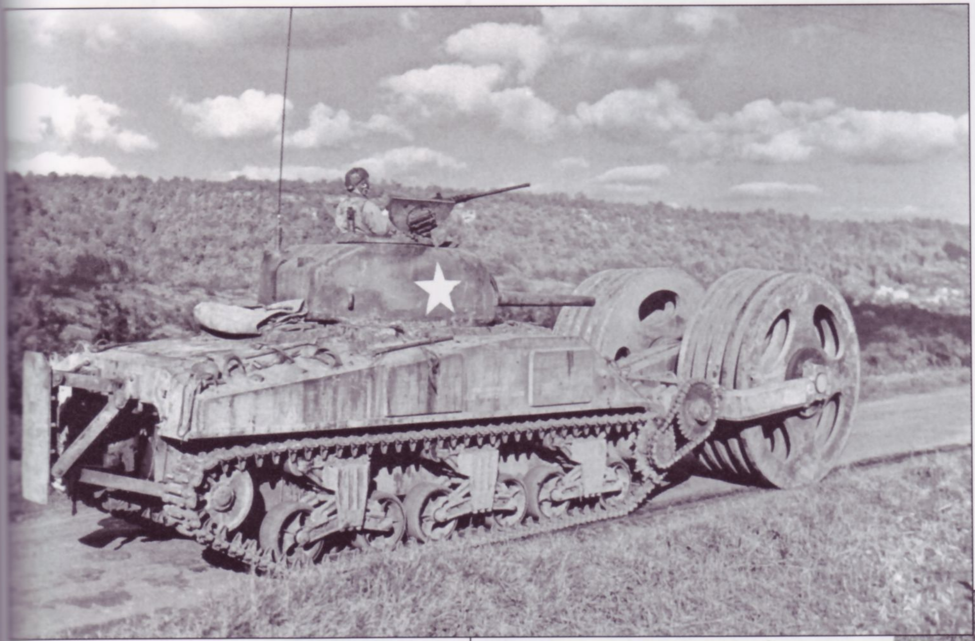
A demonstration of two T1E3 mine exploders was conducted in England in May 1944 to familiarize armored units with its capability. The M4A1 pushing the mine exploder was named “Aunt Jemima” after the popular pancake brand, and this nickname became the most popular name for this type of mine exploder.



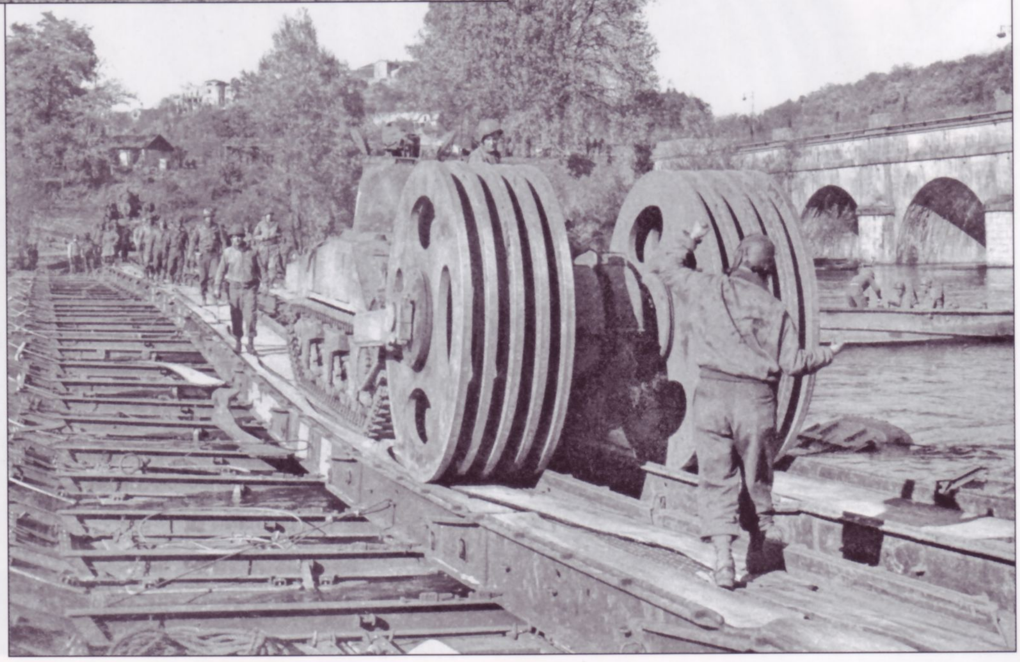
A demonstration in England in May 1944 before D-Day shows the limitations of using the T1E3 Aunt Jemima in rough terrain. This demonstration led to an initial deployment of the T1E3 with the 6th Armored Division.



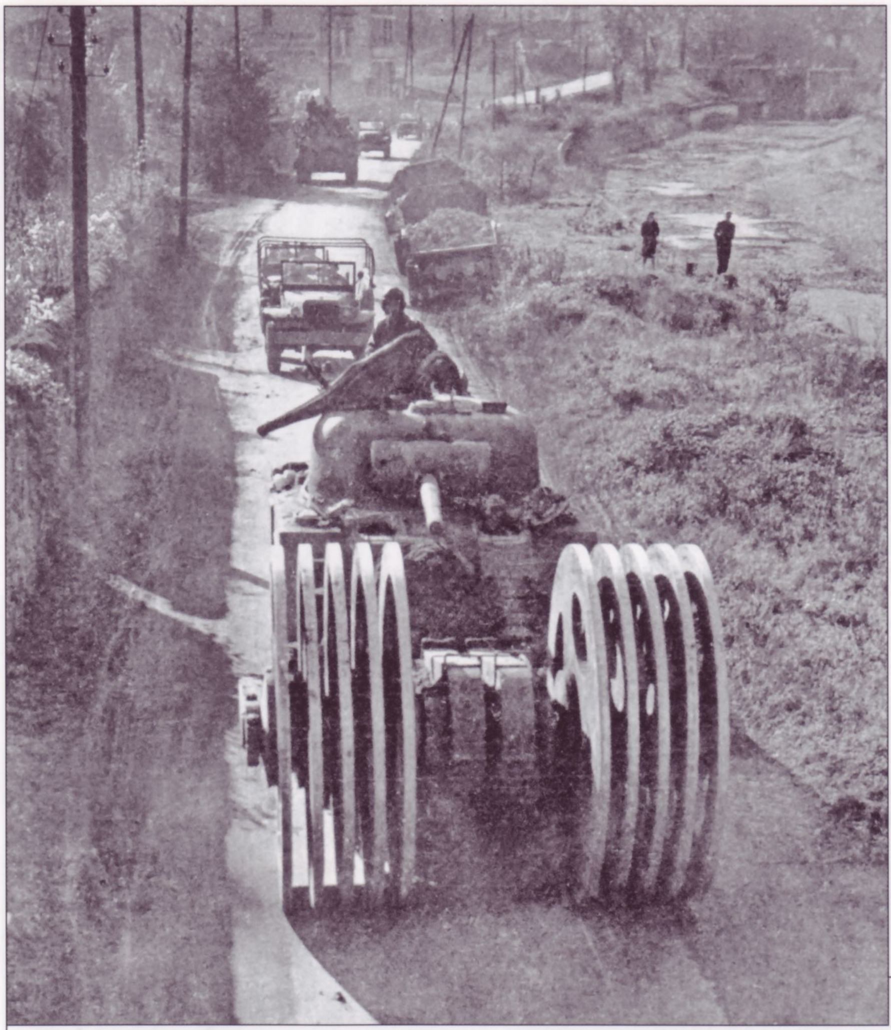
A useful overhead detail shot showing the configuration of the rollers in the T1E3 mine exploder.



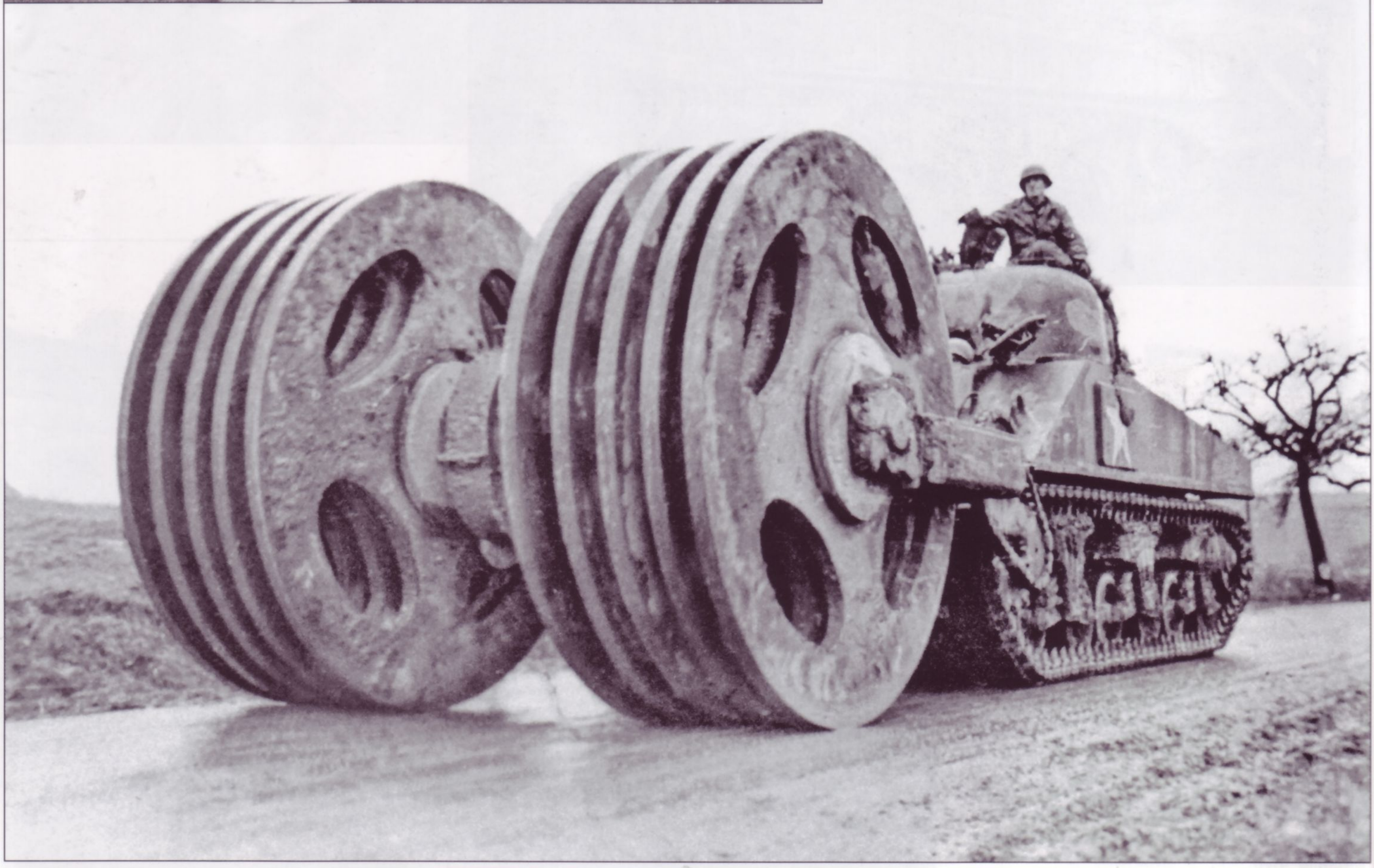
A M4 with a T1E3 Aunt Jemima mine exploder of the 25th Armored Engineer Battalion, 6th Armored Division on a road near Nancy in October 1944. This provides a good view of the rear pusher plate.



A T1E3 of the 25th Armored Engineer Battalion, 6th Armored Division crosses the Moselle river on a treadway bridge near Liverdun, France on 7 October 1944.

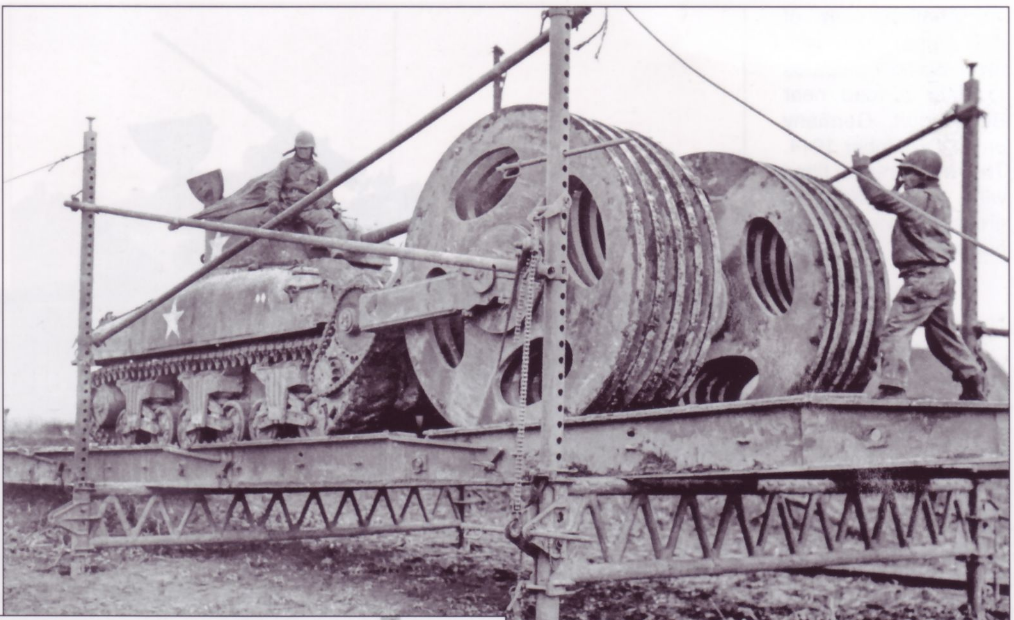


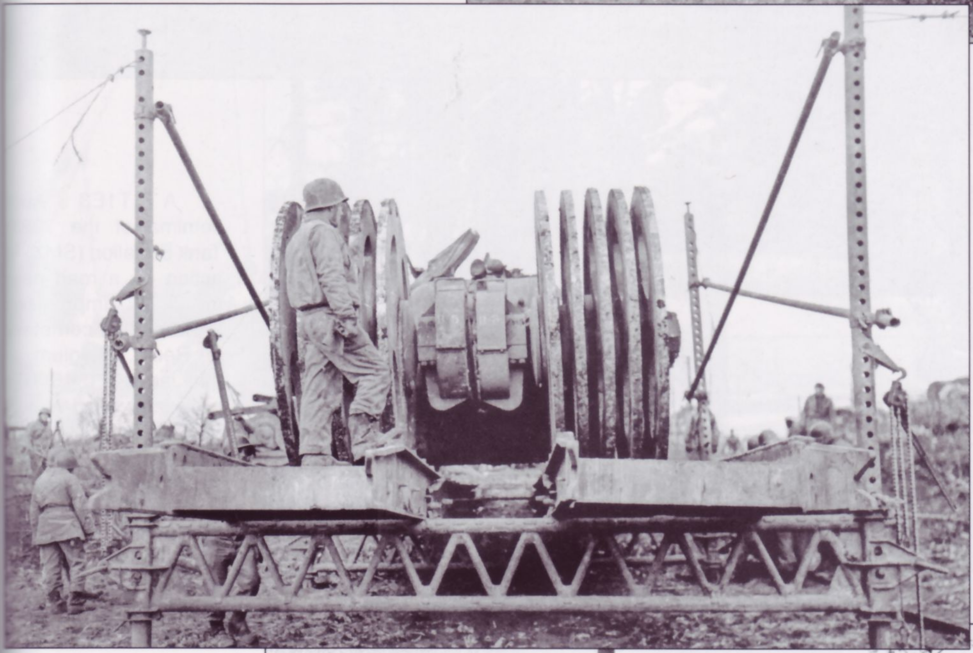
A T1E3 temporarily attached to the 25th Armored Engineer Battalion, 6th Armored Division rolls down a road near Nancy, France on 7 October 1944.



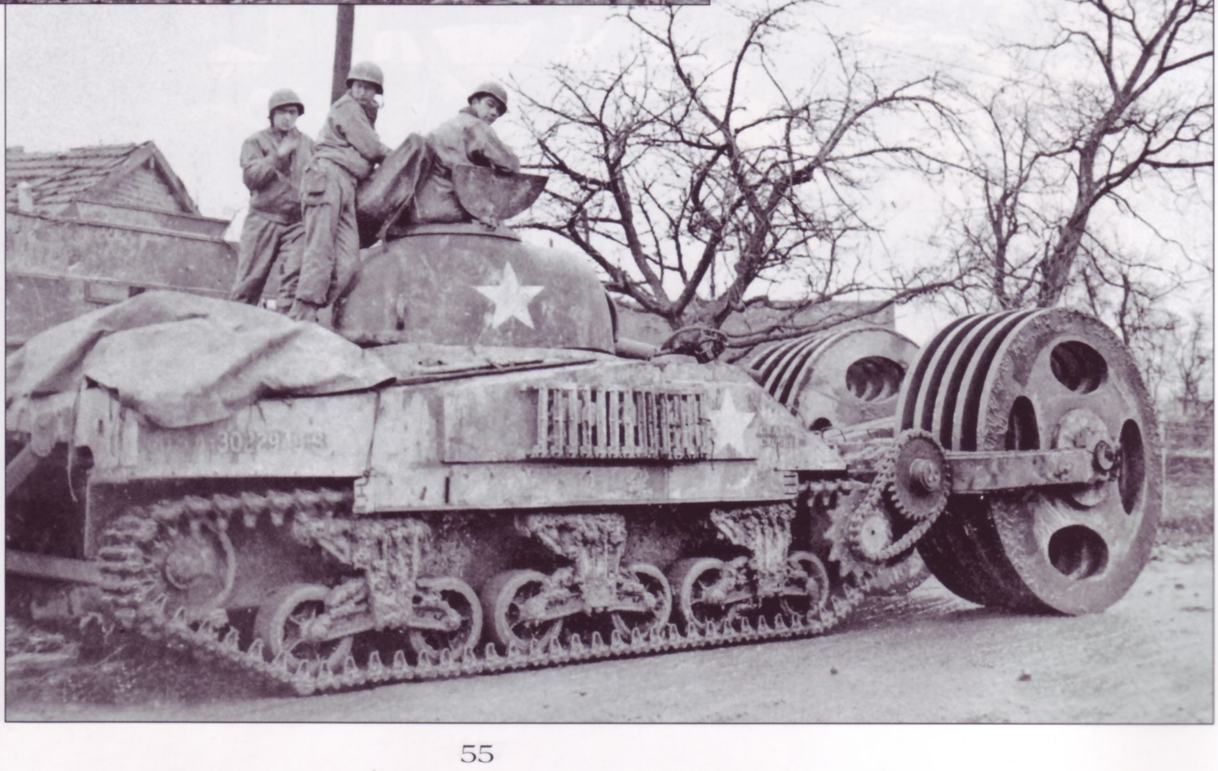
A M4 pushes a T1E3 Aunt Jemima mine exploder while supporting the 712th Tank Battalion on 6 December 1944.

One of the concerns about using the T1E3 was the effect of its combined 54 ton weight when moved over treadway bridges. Here, the 739th Tank Battalion (SMX) tests a M4A1 pushing a T1E3 mine exploder on 10 December 1944.



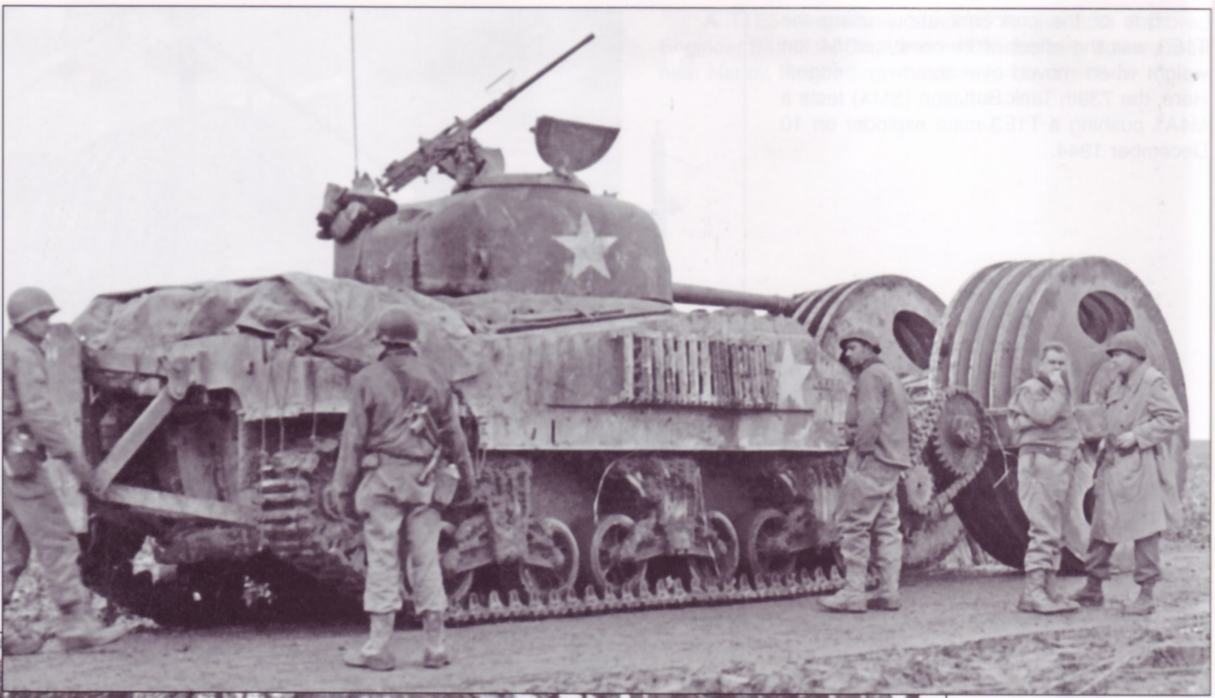


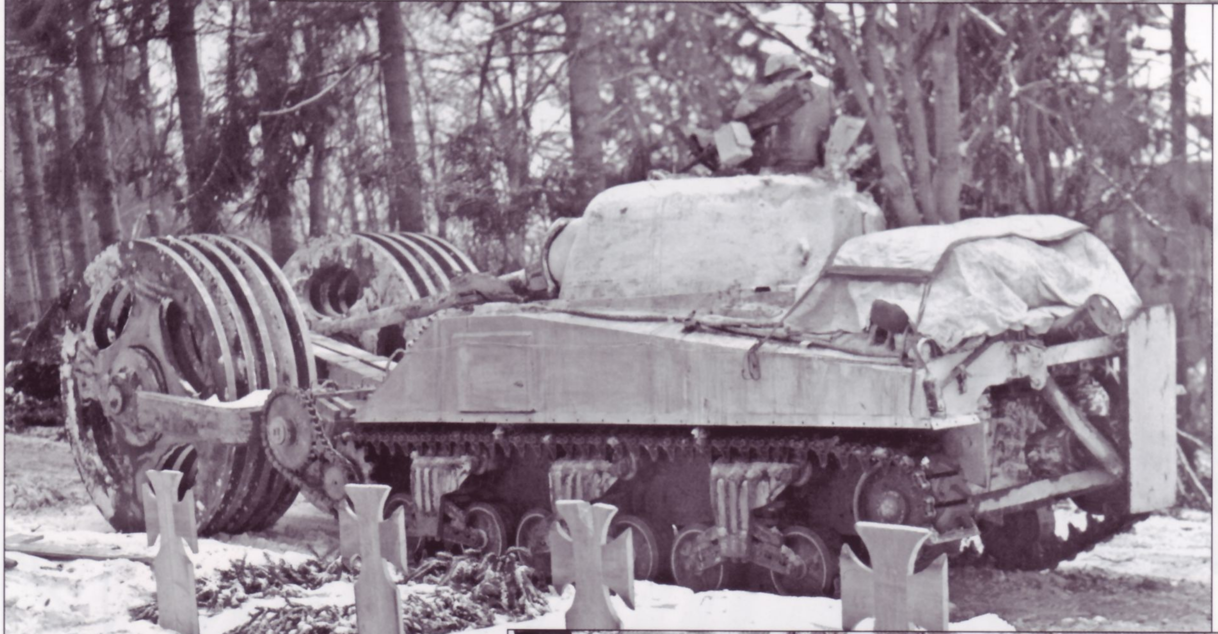
Another view of the 10 December 1944 test of a T1E3 mine exploder in Germany showing details of its configuration between the two roller assemblies.



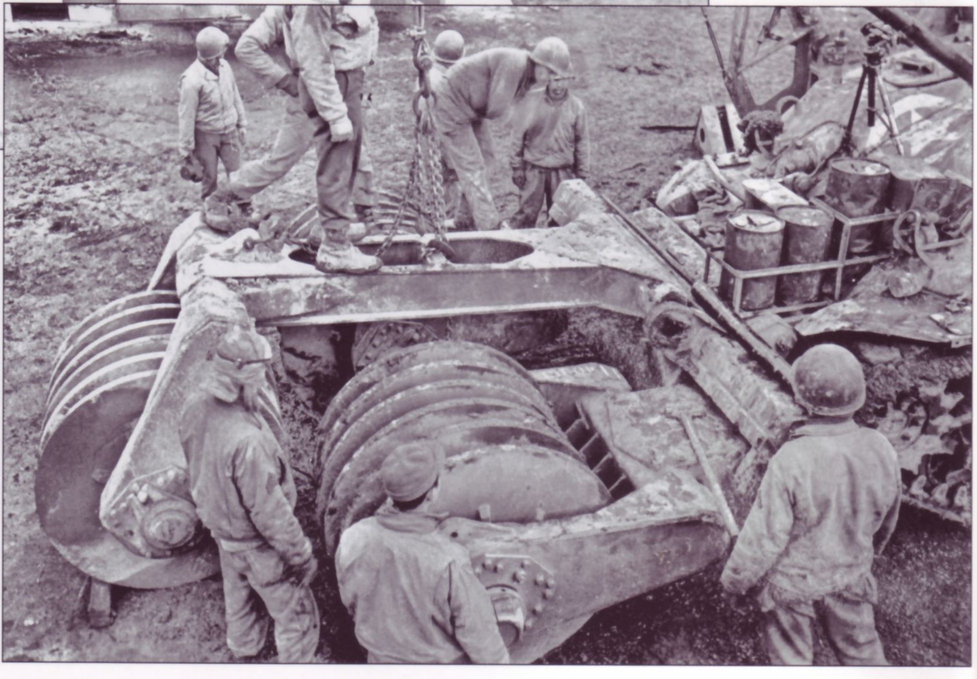
A T1E3 Aunt Jemima of the 739th Tank Battalion (SMX) in operation near Beggendorf, Germany on 10 December 1944.

Another view of the same tank with mine exploder prepares to clear a road near Beggendorf, Germany on 11 December 1944. The M4 tank is fitted with non-standard grouser stowage on the hull side.



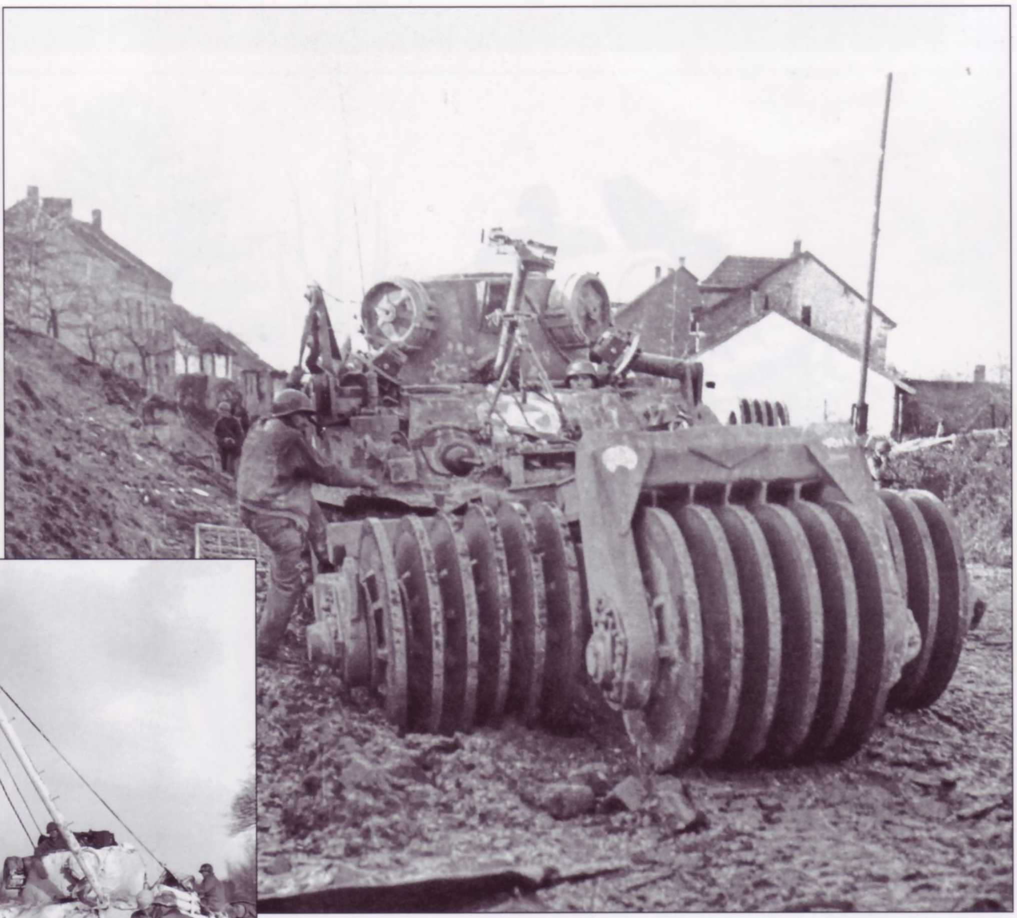


A T1E3 Aunt Jemima of the 738th Tank Battalion (SMX) in action on a road near an improvised Wehrmacht cemetery in Recht, Belgium in mid-January 1945. This provides a good view of the pusher plate at the rear of the tank was designed to permit another tank to get behind the mine-roller tank and give it a push if stuck.

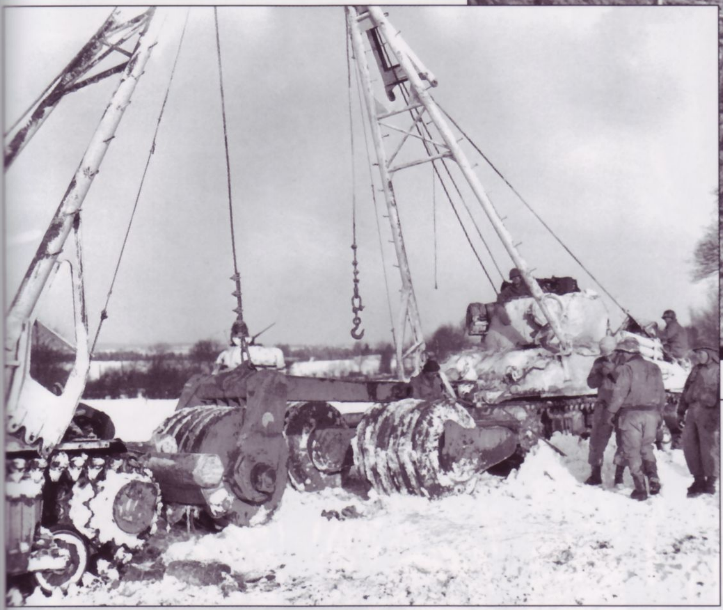


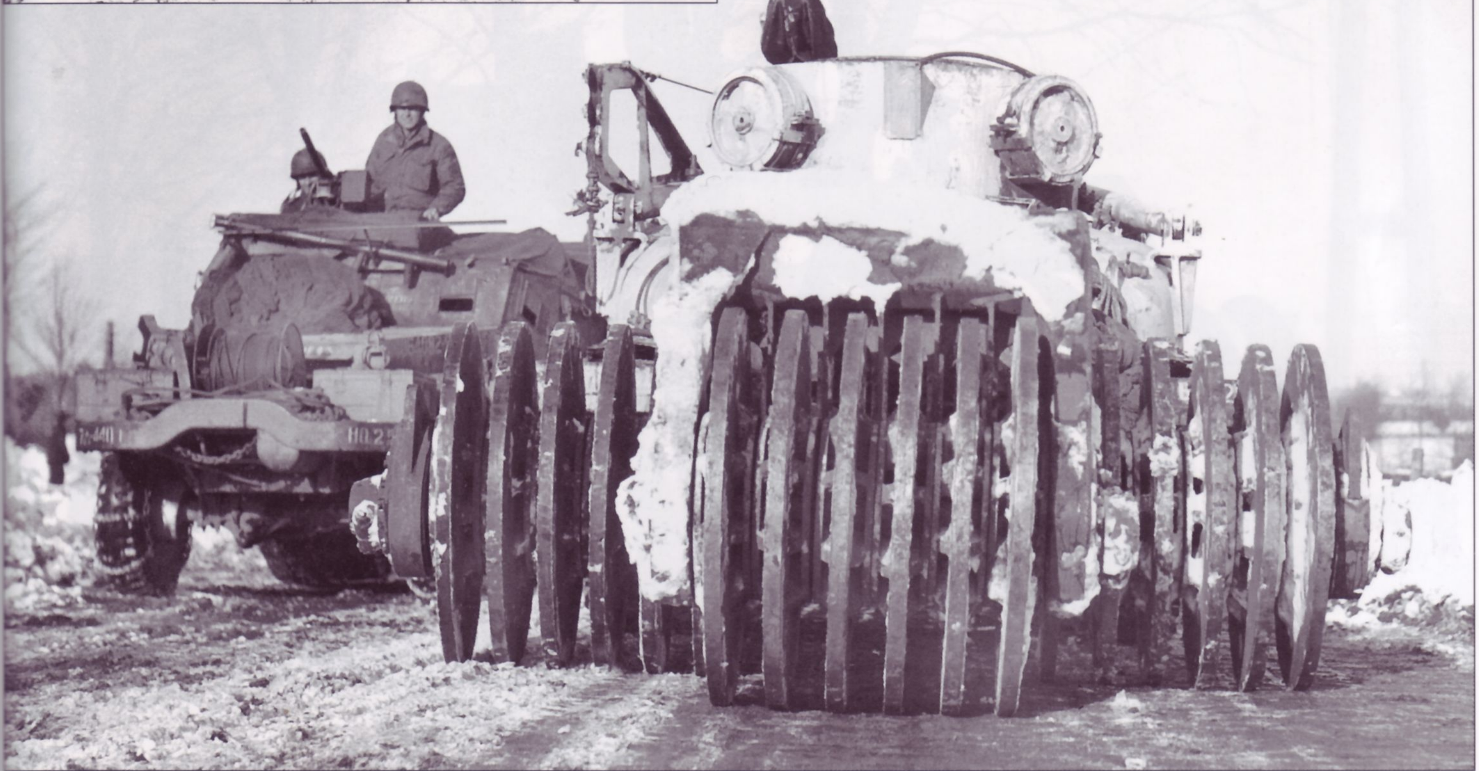
A crew from the 739th Tank Battalion (SMX) mounts a T1E1 Earthworm mine exploder on the front of a M32B1 while supporting the 30th Division in Germany on 10 December 1944.

A M32 pushing a T1E1 Earthworm mine exploder of the 738th Tank Battalion (SMX) supports the 3rd Armored Division near Langerwehe, Germany on 10 December 1944.

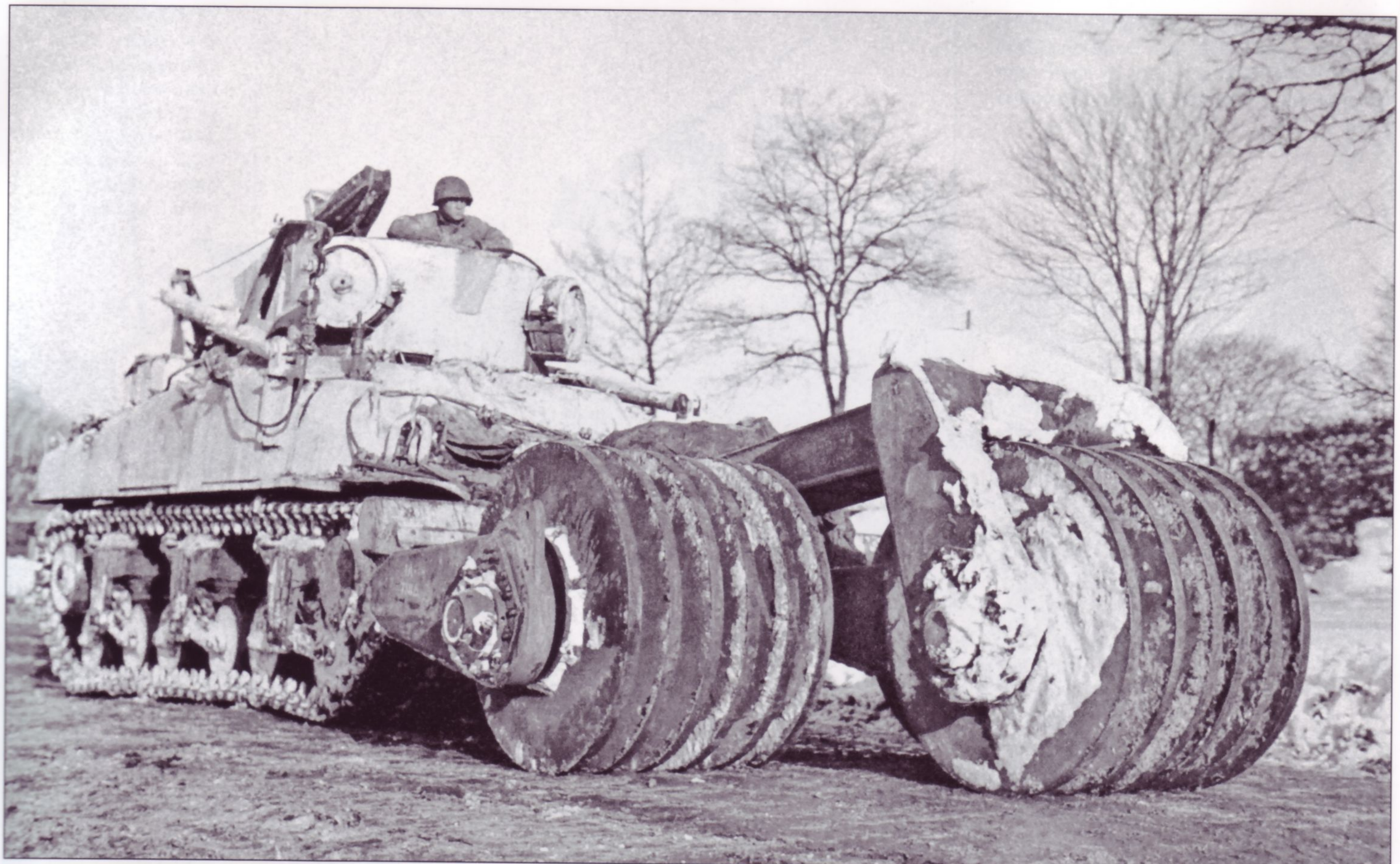


A pair of M32B1 TRVs of the Company B, 738th Tank Battalion (SMX) are used to attach a T1E1 mine roller assembly near Faymonville, Belgium on 16 January 1945.

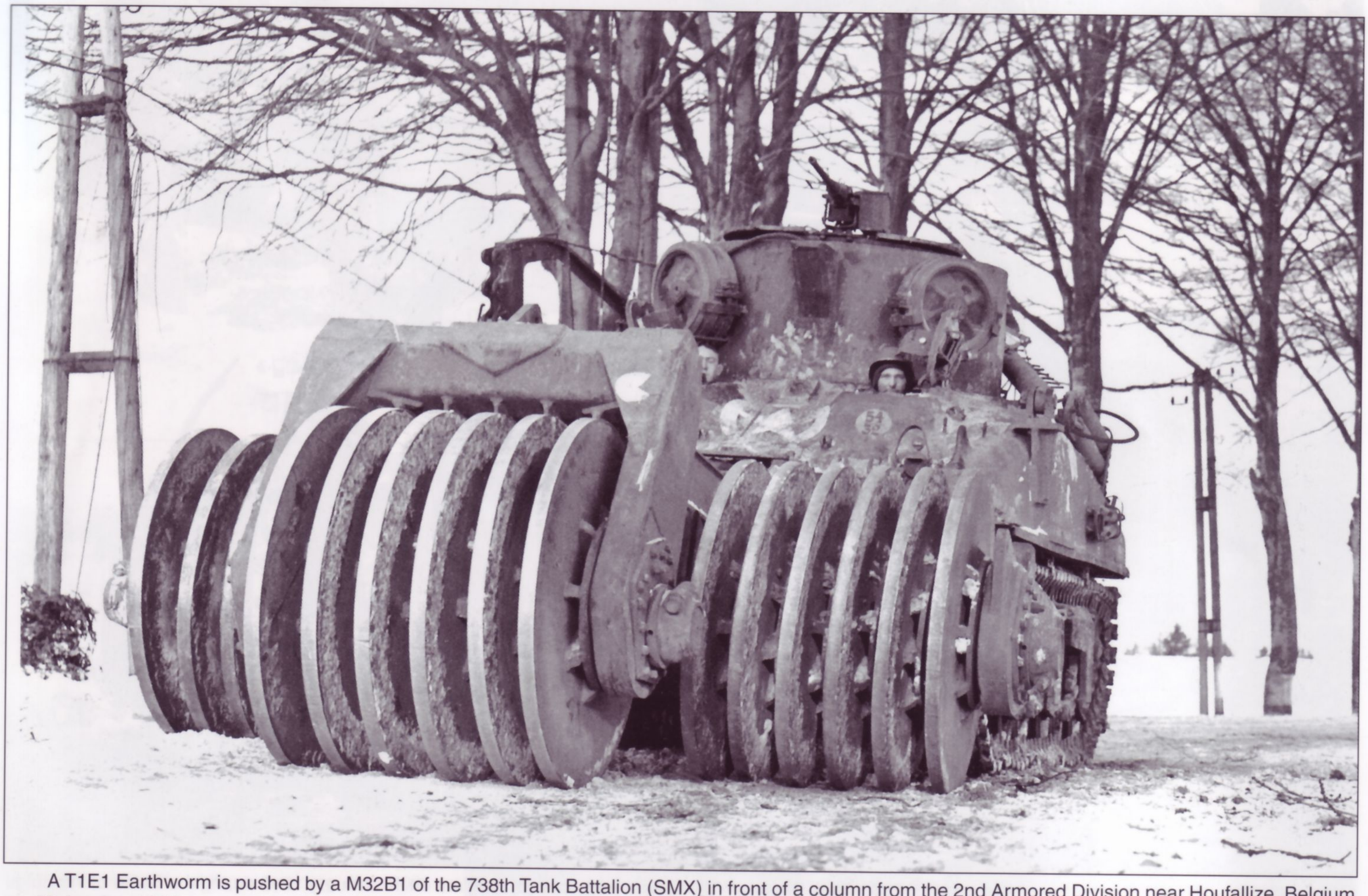




A M32B1 with T1E1 Earthworm of Company B, 738th Tank Battalion (SMX) near Faymonville, Belgium on 16 January 1945 during the Battle of the Bulge with a M3A1 half-track to the left.

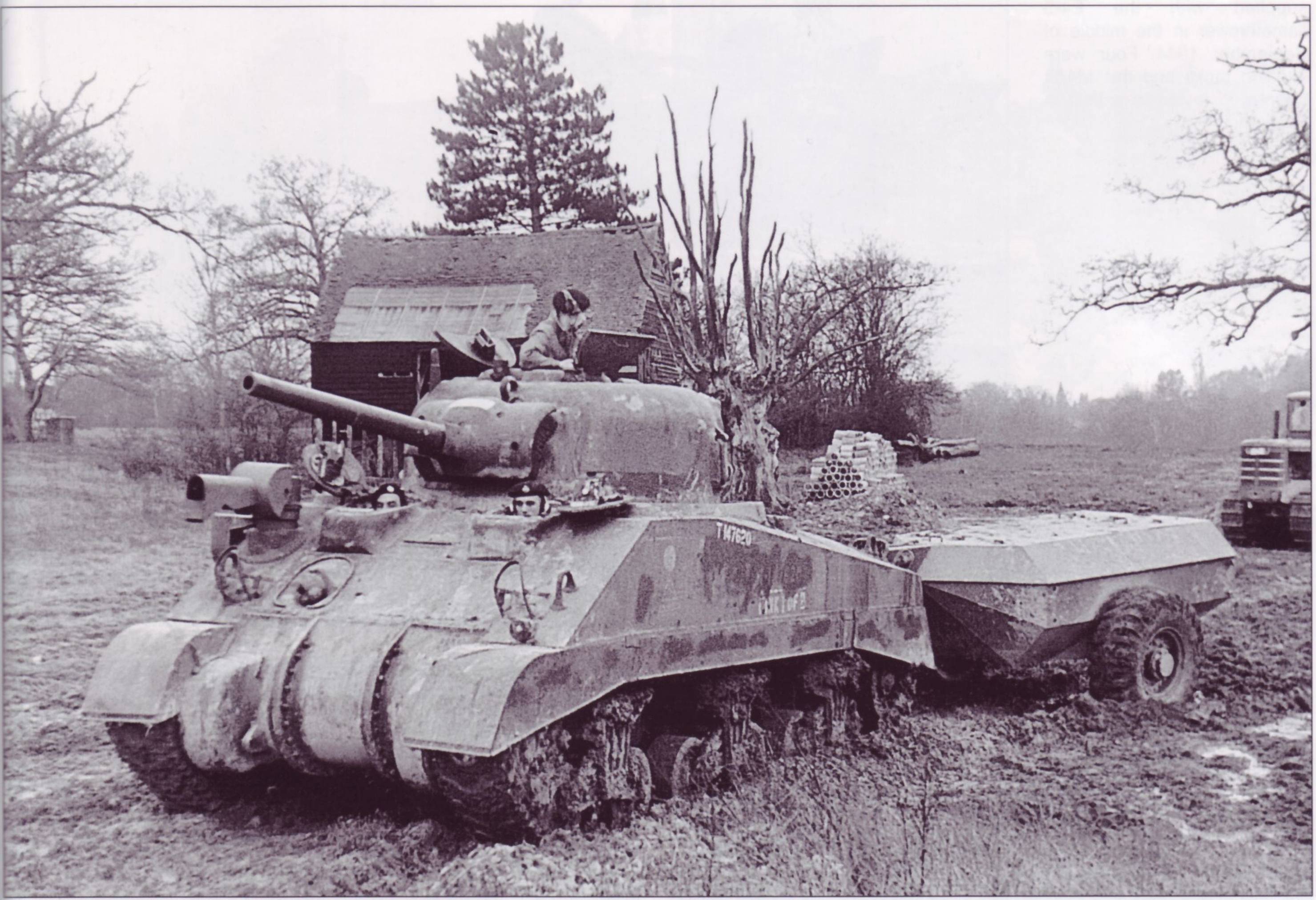


A M32B1 of Company B, 738th Tank Battalion (SMX) pushes a T1E1 Earthworm mine exploder down a road near Faymonville, Belgium on 16 January 1945.

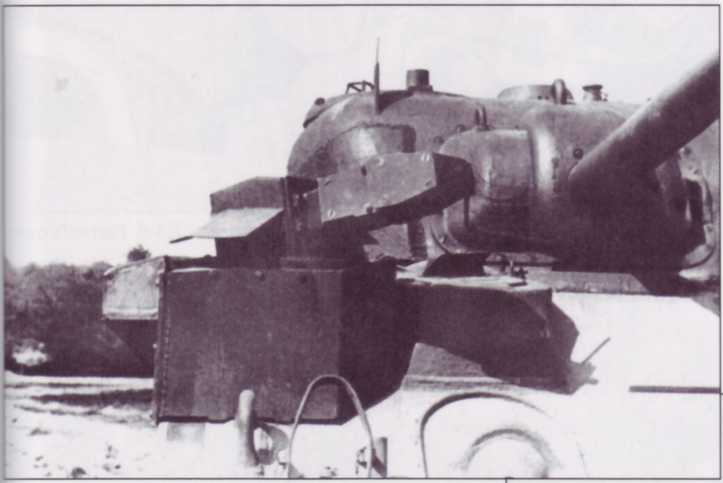


A T1E1 Earthworm is pushed by a M32B1 of the 738th Tank Battalion (SMX) in front of a column from the 2nd Armored Division near Houfallize, Belgium on 16 January 1945.

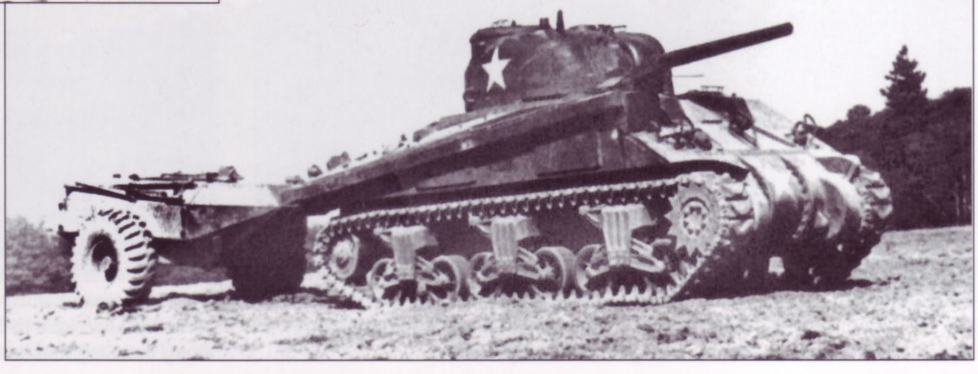
Flamethrower Tanks



The British built the pilot for the Sherman Crocodile on the M4A4 chassis as seen here but the four production tanks turned over to the US Army in the summer of 1944 were based on the M4.

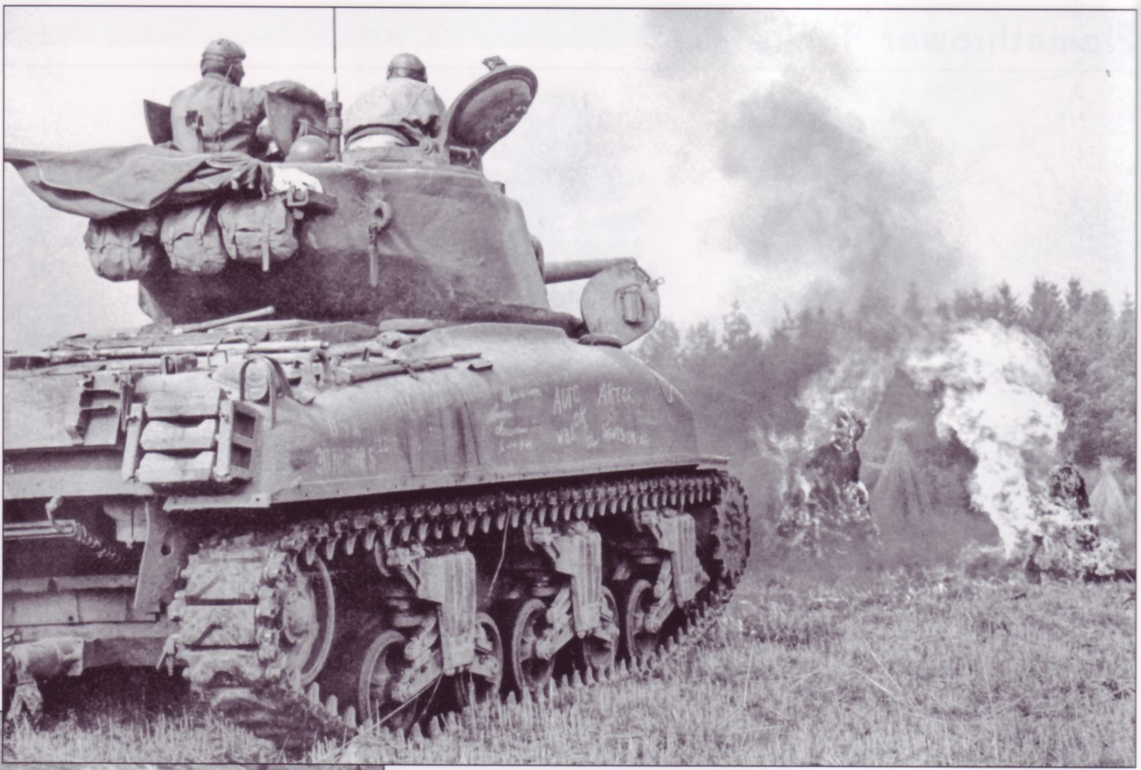


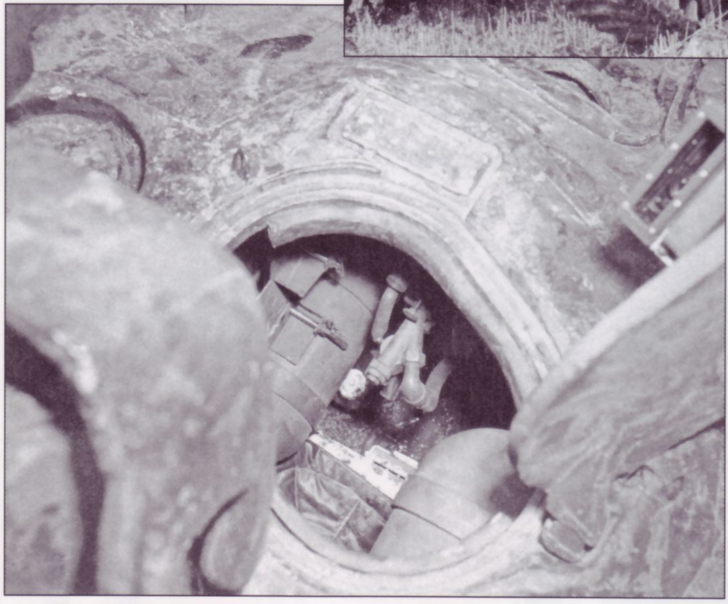
This close-up shows the unique flame-gun fitted to the Sherman Crocodile.



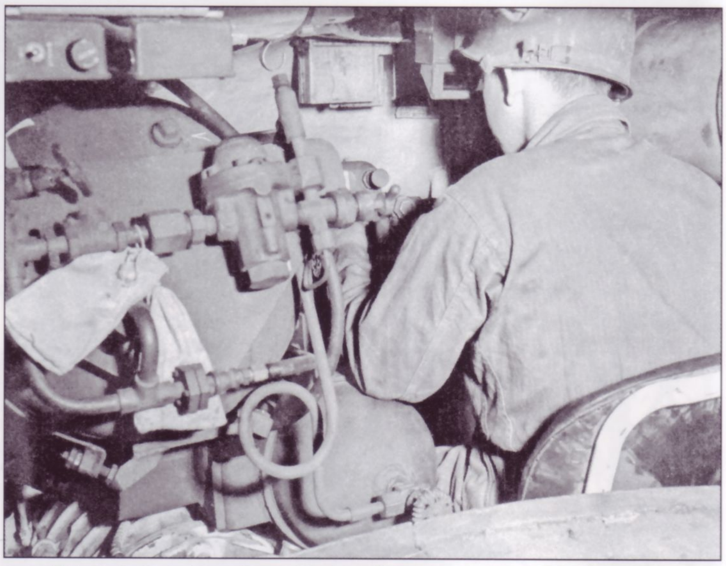
This is one of four M4 Crocodile flamethrower tanks built by the British for a US Army requirement.

The 70th Tank Battalion was the first US unit in the ETO supplied with the E4-5 flamethrower in the middle of September 1944. Four were fitted to tanks and this M4A1 (76mm) is tested in a field in Belgium.

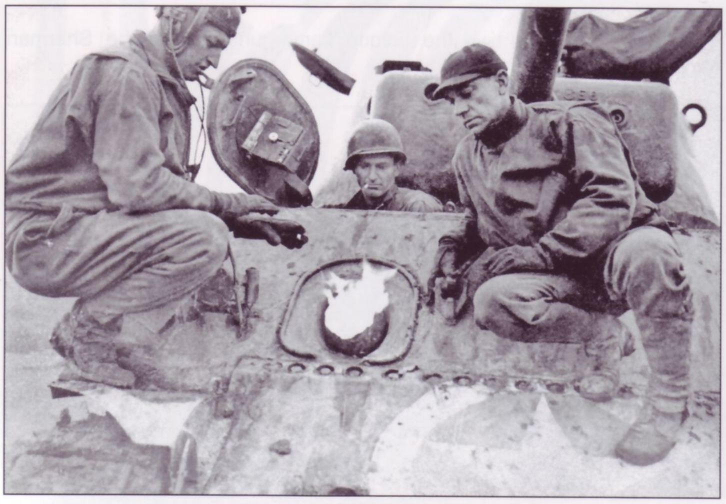




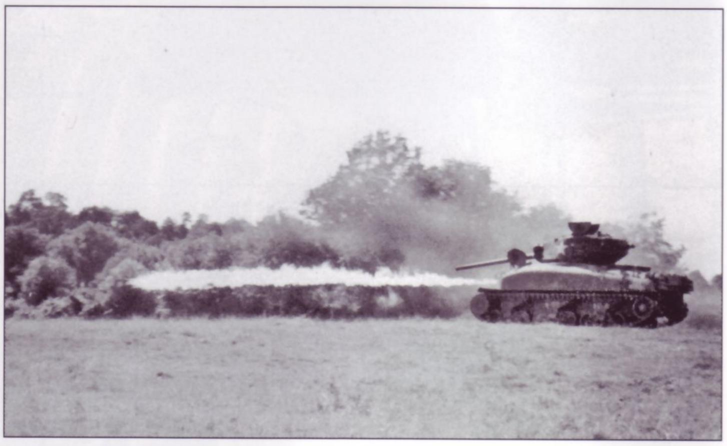
This view looks down into the hatch of a M4A1 (76mm) of the 70th Tank Battalion fitted with the E4-5 flamethrower in place of the front hull machine gun. As can be seen in the upper right, the small flame gun is very hard to distinguish from the usual machine gun barrel.



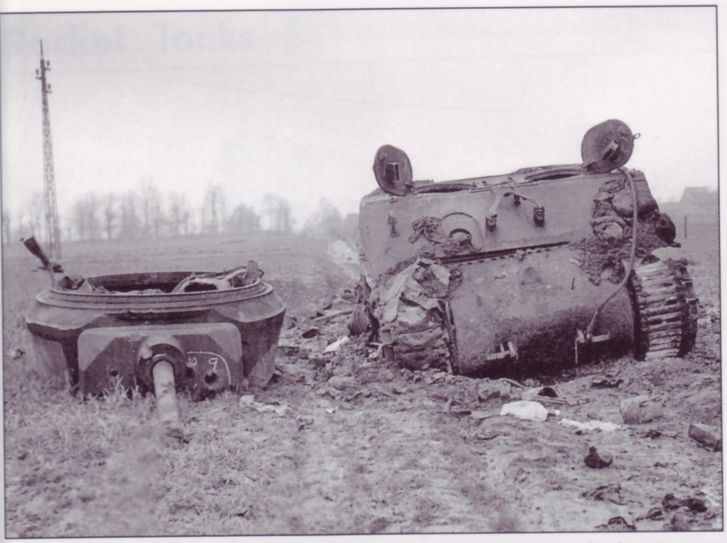
This interior view shows the configuration of the E4-5 flamethrower mounting inside the tank.



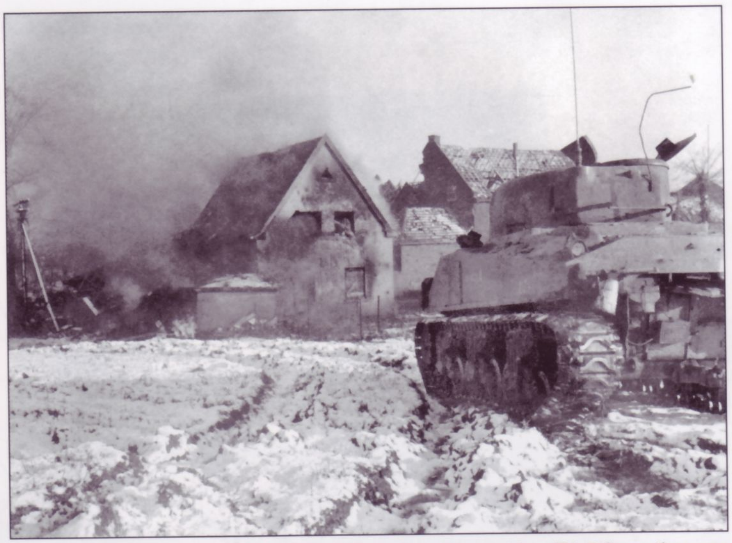
A crew from the 70th Tank Battalion tests an E4-5 flamethrower mounted on a M4A3 (76mm) during trials in Belgium.



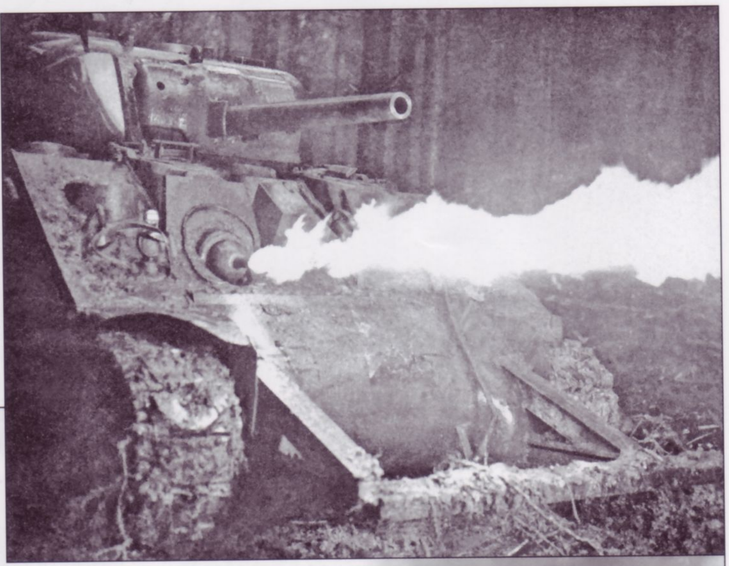
The 70th Tank Battalion demonstrated the E4-5 flamethrower to several units in September 1944 as seen here, and two were attached to the 741st Tank Battalion later in September 1944 for attacks against German pillboxes along the Siegfried line.



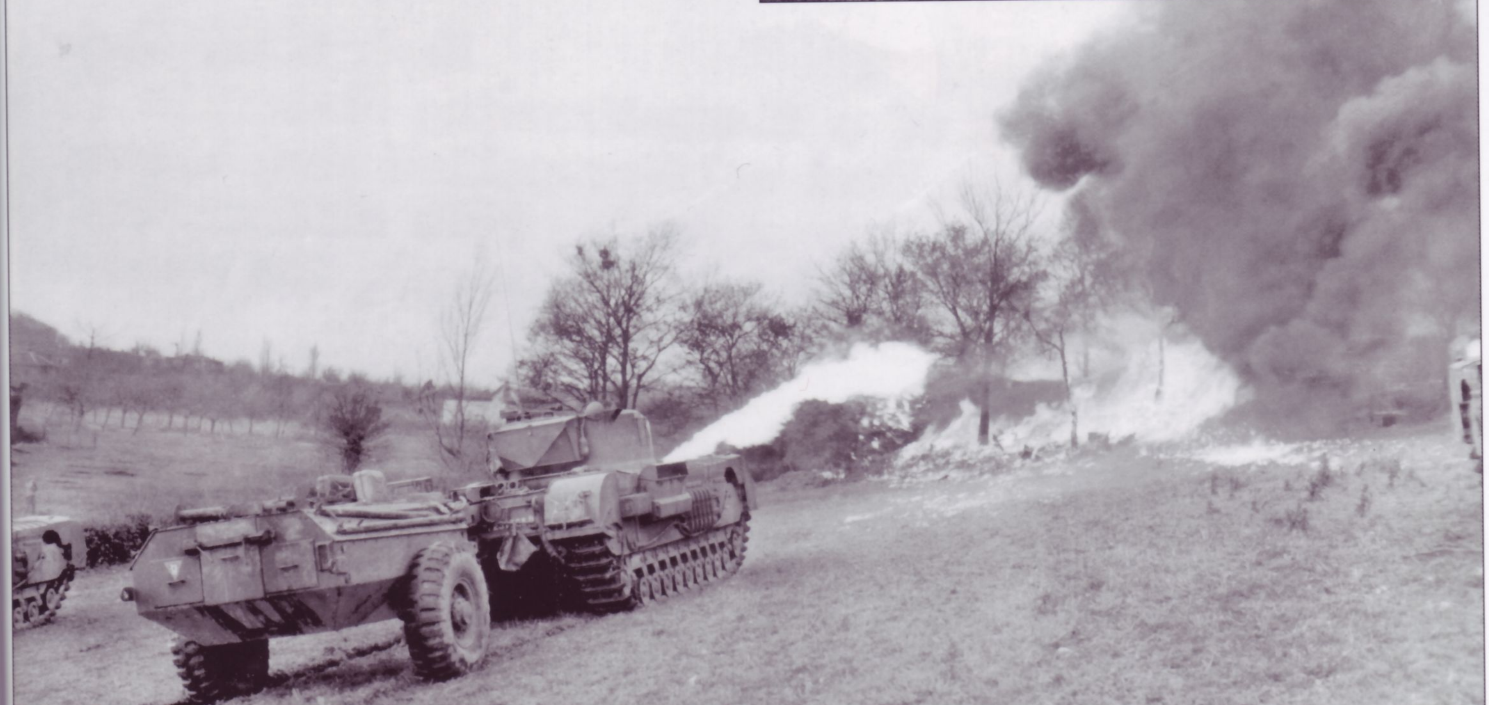
This M4A3E2 of the 743rd Tank Battalion was knocked out near Fronhoven in late November 1944 after having been hit by four 88mm rounds from an anti-tank gun about 800 yards away. One bounced off the glacis plate, and two off the mantlet before a lucky hit was made which actually entered the telescope opening. Although not immediately apparent, this vehicle was fitted with a E4-5 flamethrower in the hull machine gun position.



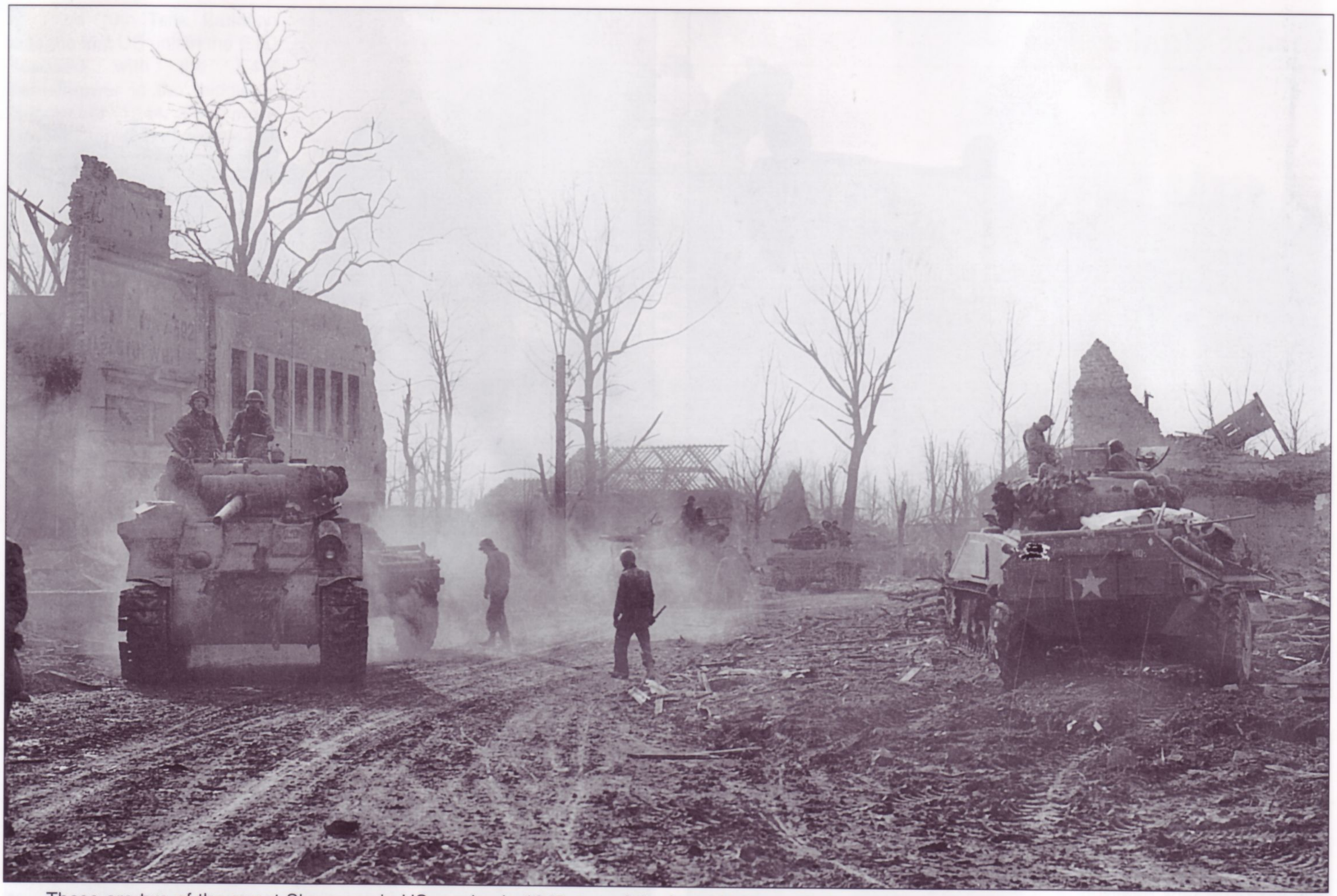
This M4 tank of the 747th Tank Battalion fitted with a E4-5 flamethrower is seen moments after having set a barn afire near Schleiden, Germany on 5 January 1945.



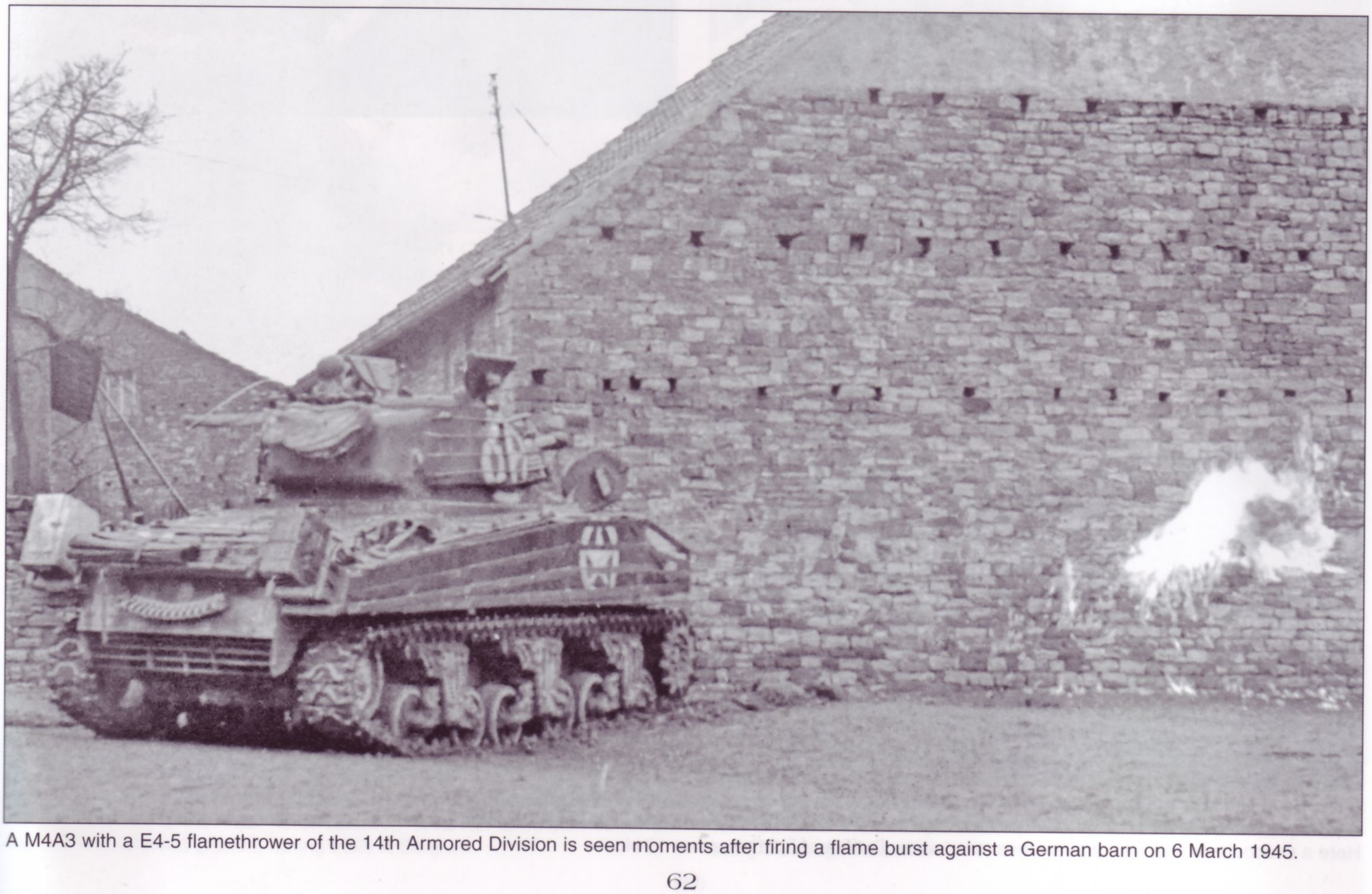
An interesting photo of a E4-5 flamethrower mounted on a M4 tank of the 709th Tank Battalion being discharged near Zweifall, Germany on 24 November 1944. The photo is doubly interesting as the tank is still fitted with one of the rare Green Dozer hedgerow cutters more commonly associated with the 747th Tank Battalion.



Due to shortages of flame-thrower tanks, British tanks were often seconded to US units for support. In this case, a Churchill Crocodile of the 9020 Tank Squadron, 1st Fife and Forfar Yeomanry was attached to the US 2nd Armored Division during operations in late November along the German Siegfried line. Here a Crocodile is attacking a target near Merkstein, German on 3 December 1944.

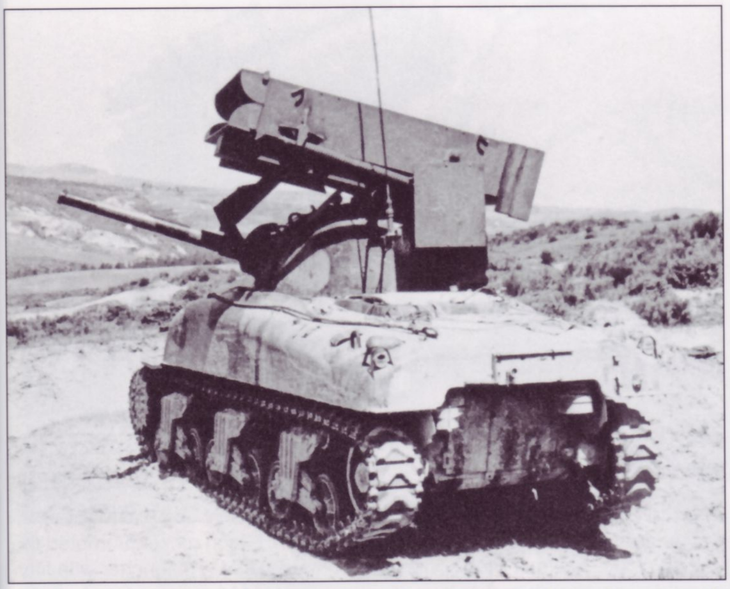


These are two of the rarest Shermans in US service in 1945, two of the four M4 Crocodile flamethrower tanks of the 739th Tank Battalion. They were first used to attack the citadel in Julich during Operation Grenade on 24 February 1945 and are seen outside the town that day.

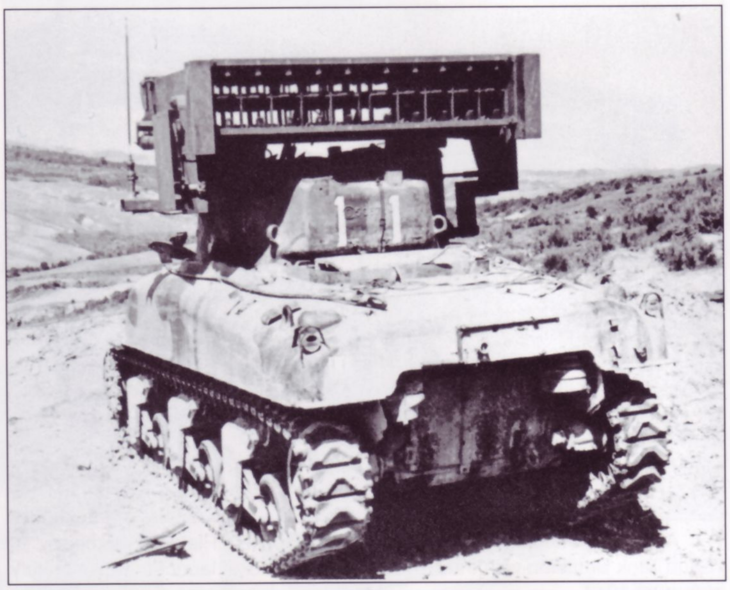


A M4A3 with a E4-5 flamethrower of the 14th Armored Division is seen moments after firing a flame burst against a German barn on 6 March 1945.

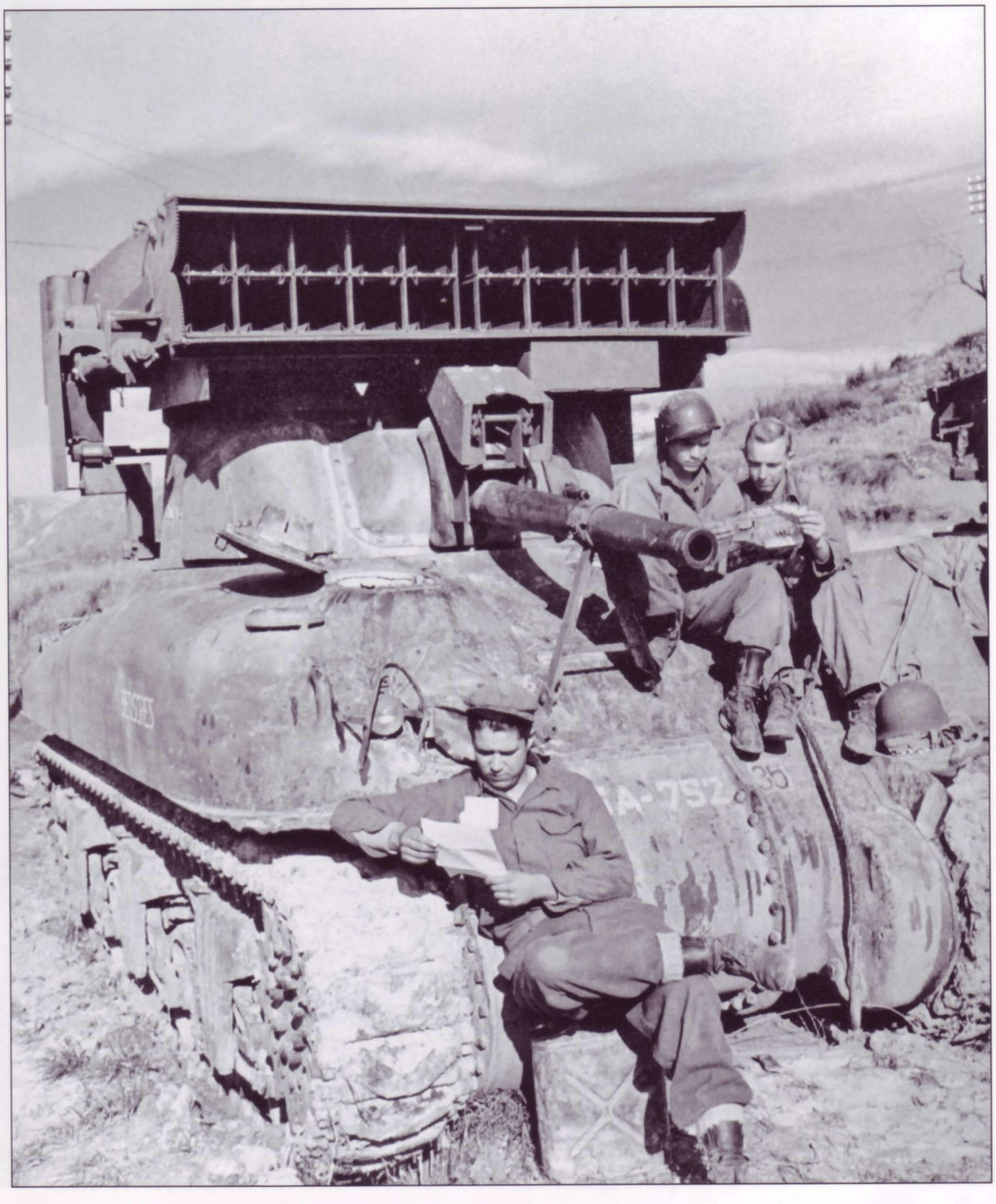
Rocket Tanks



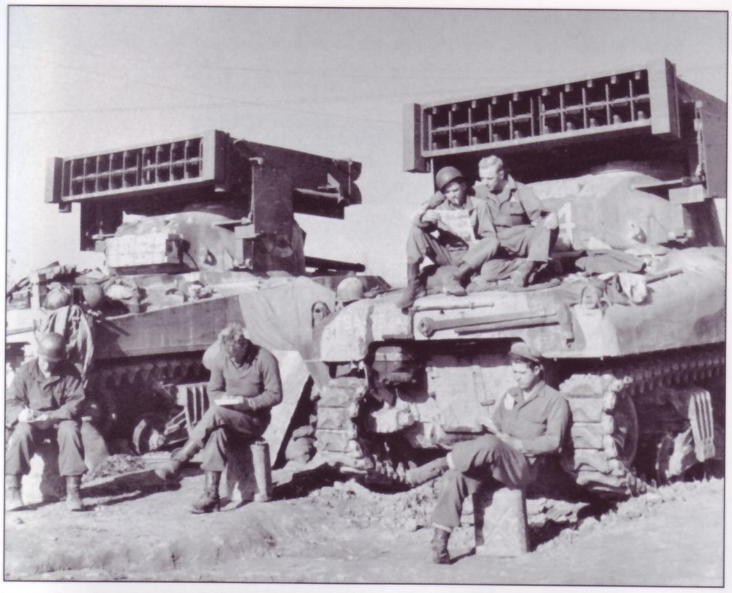
After being rejected by many units for their intended role to breach shoreline beach obstructions, the Army transferred eight T40 Whiz-Bang 7.2 inch rocket launchers to two tank battalions in Italy in August 1944 for potential use in artillery fire support.



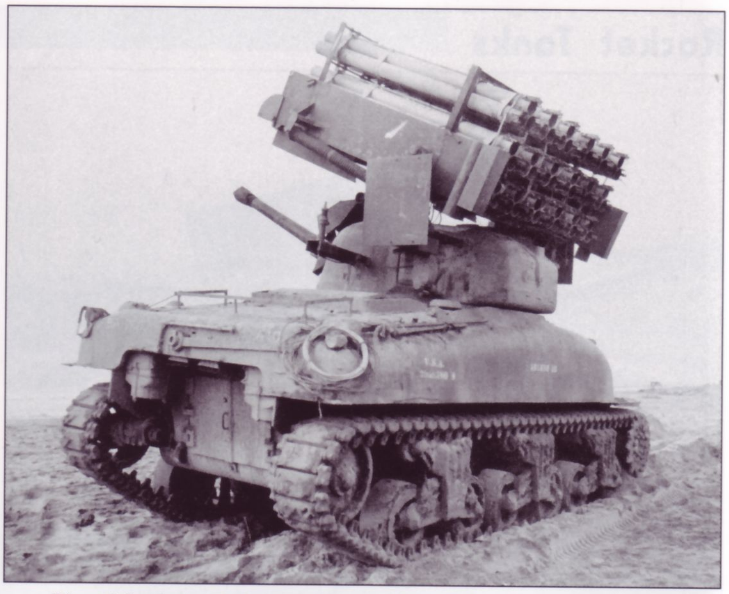
This is a rear view of one of the T40 launchers that were used in test-firings in Italy by the 752nd Tank Battalion on 12 August 1944.



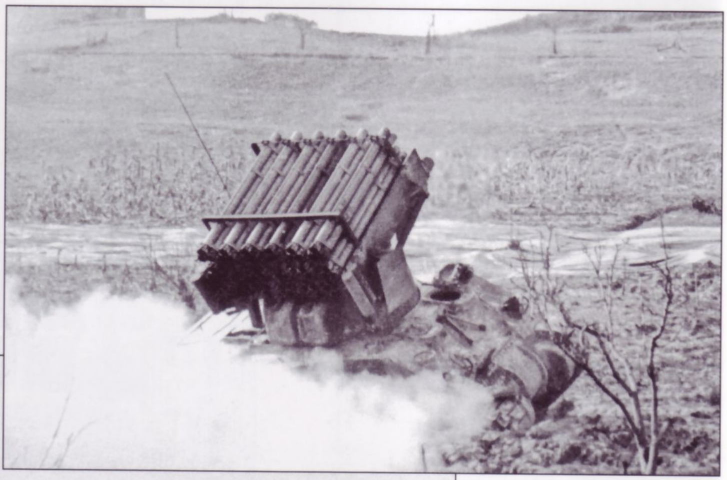
A M4A1 with T40 Whiz-Bang launcher of the 3rd (Rocket) Platoon, Company B, 752nd Tank Battalion in August 1944 after having been trained on the new rocket tanks.



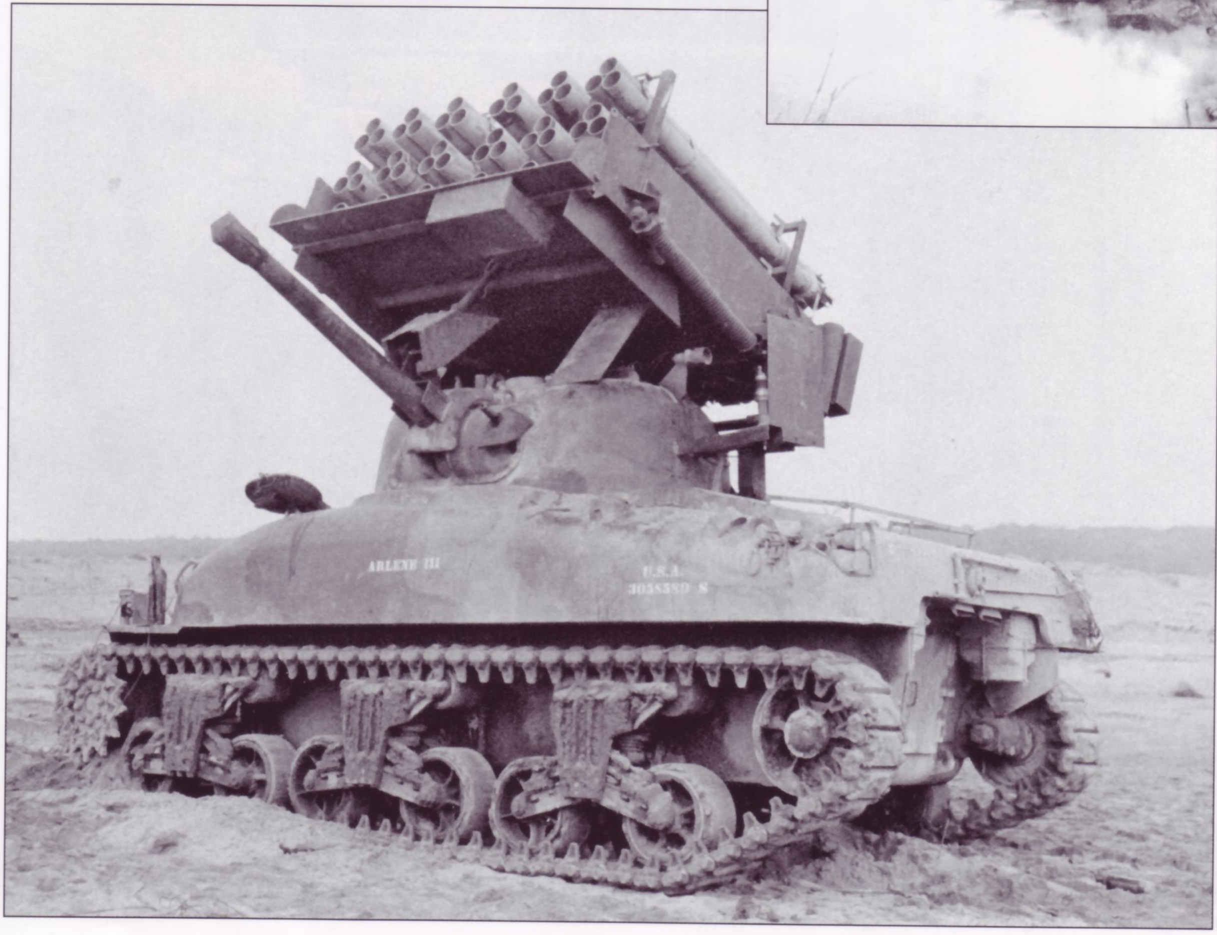
Another view of the crews of the 3rd (Rocket) Platoon, Company B, 752nd Tank Battalion with their T40 Whiz-Bang rocket launcher tanks in Italy in August 1944.



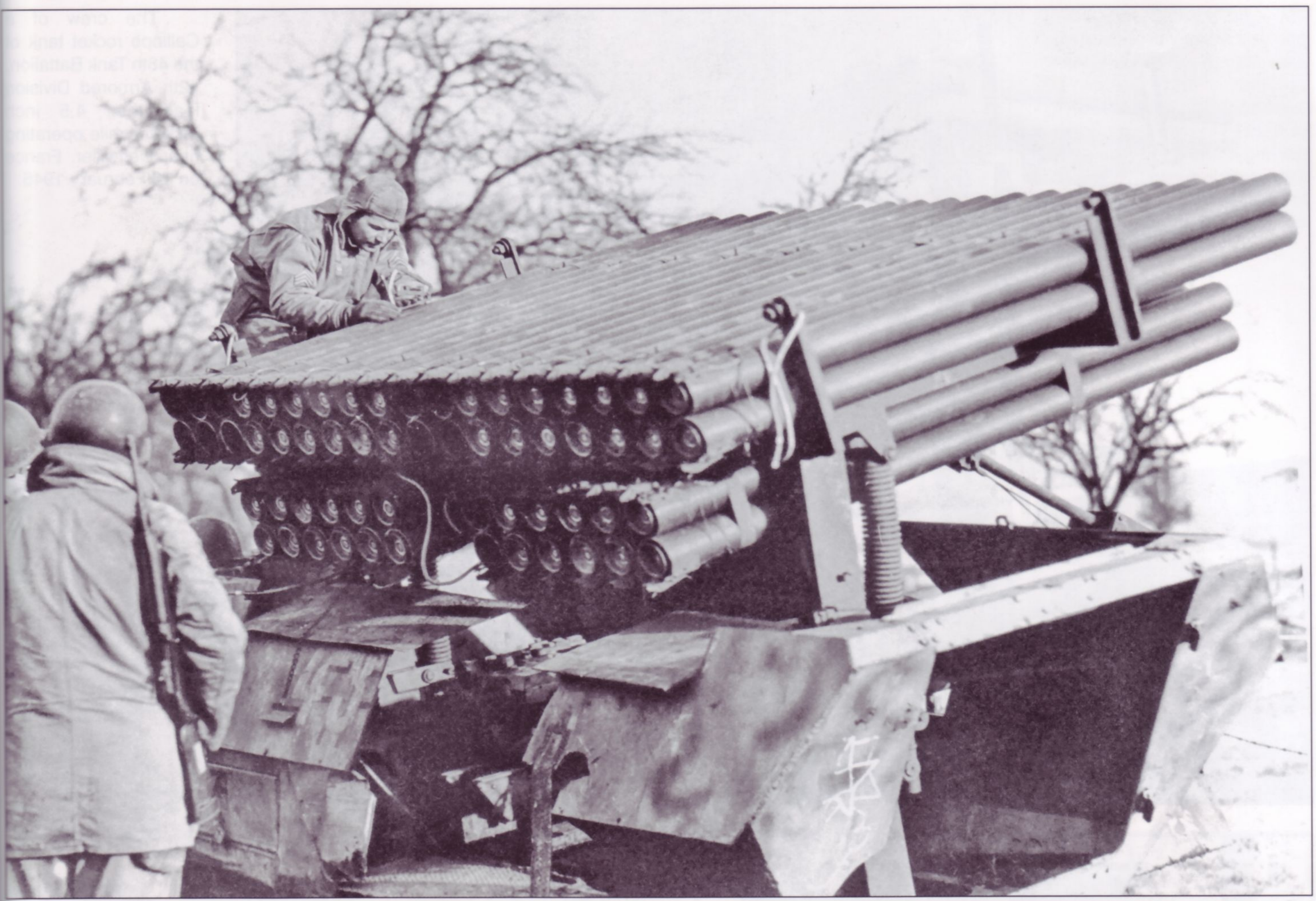
Dissatisfaction with the short-range of the 7.2 inch rocket prompted the 752nd and 760th Tank Battalions to rearm the T40 (M17) launcher with fifty-four 4.5 inch aircraft rocket launch tubes. This M4A1 is from Co. A, 760th Tank Battalion near Viareggio, Italy on 15 December 1944.



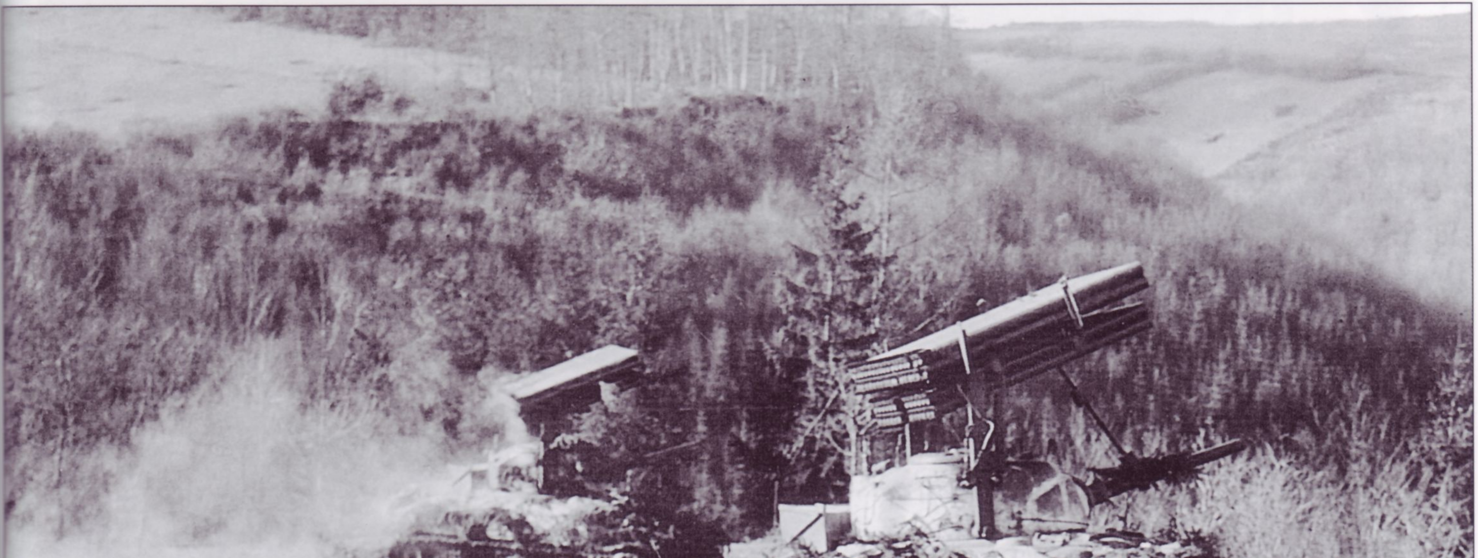
A M4 with the modified M17 Whiz-Bang launcher fires 4.5 inch rockets in Italy in March 1945.



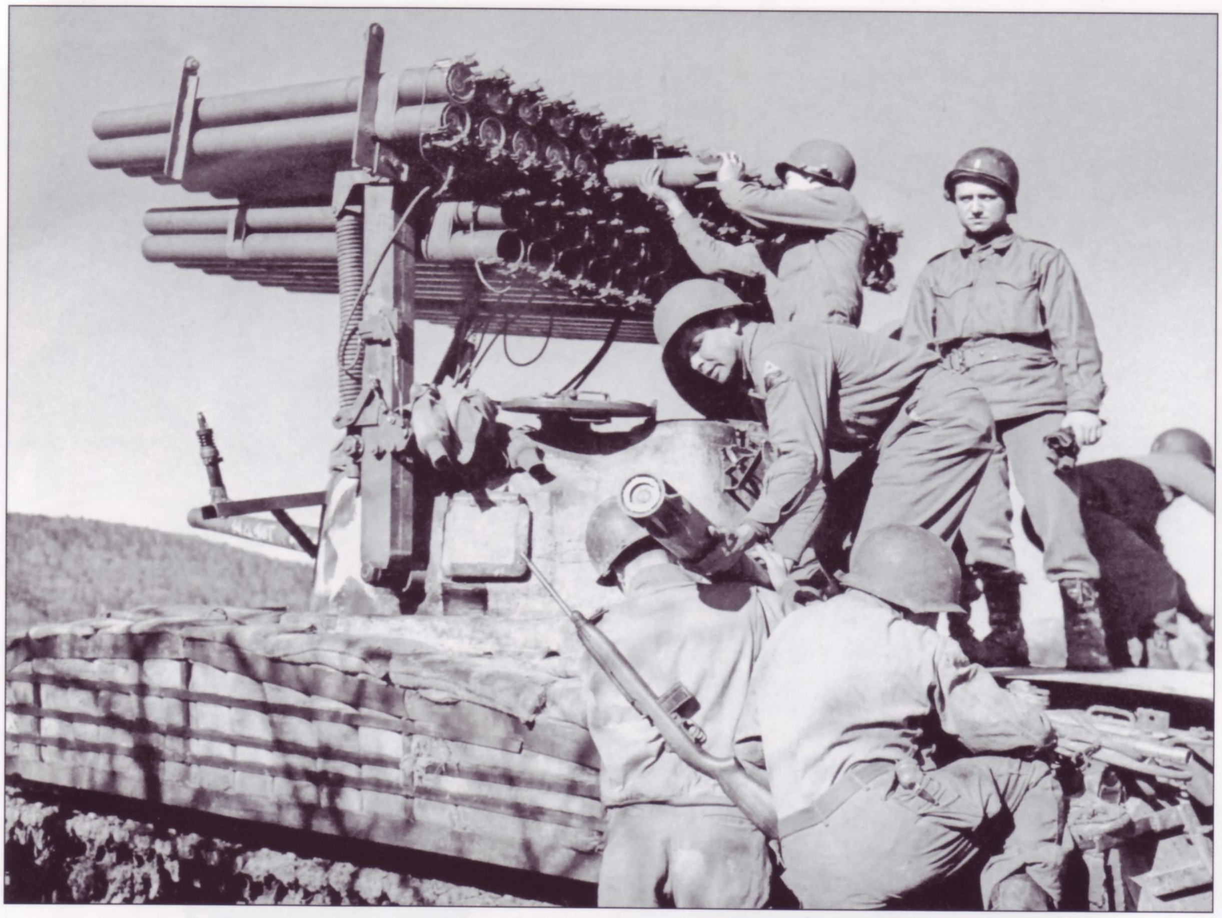
Another view of "Arlene III" from the 760th Tank Battalion after fitted with an improvised rocket launcher based on the M17 Whiz-Bang launcher. This was mounted on the tank in late November when the battalion had been pulled out of the line.



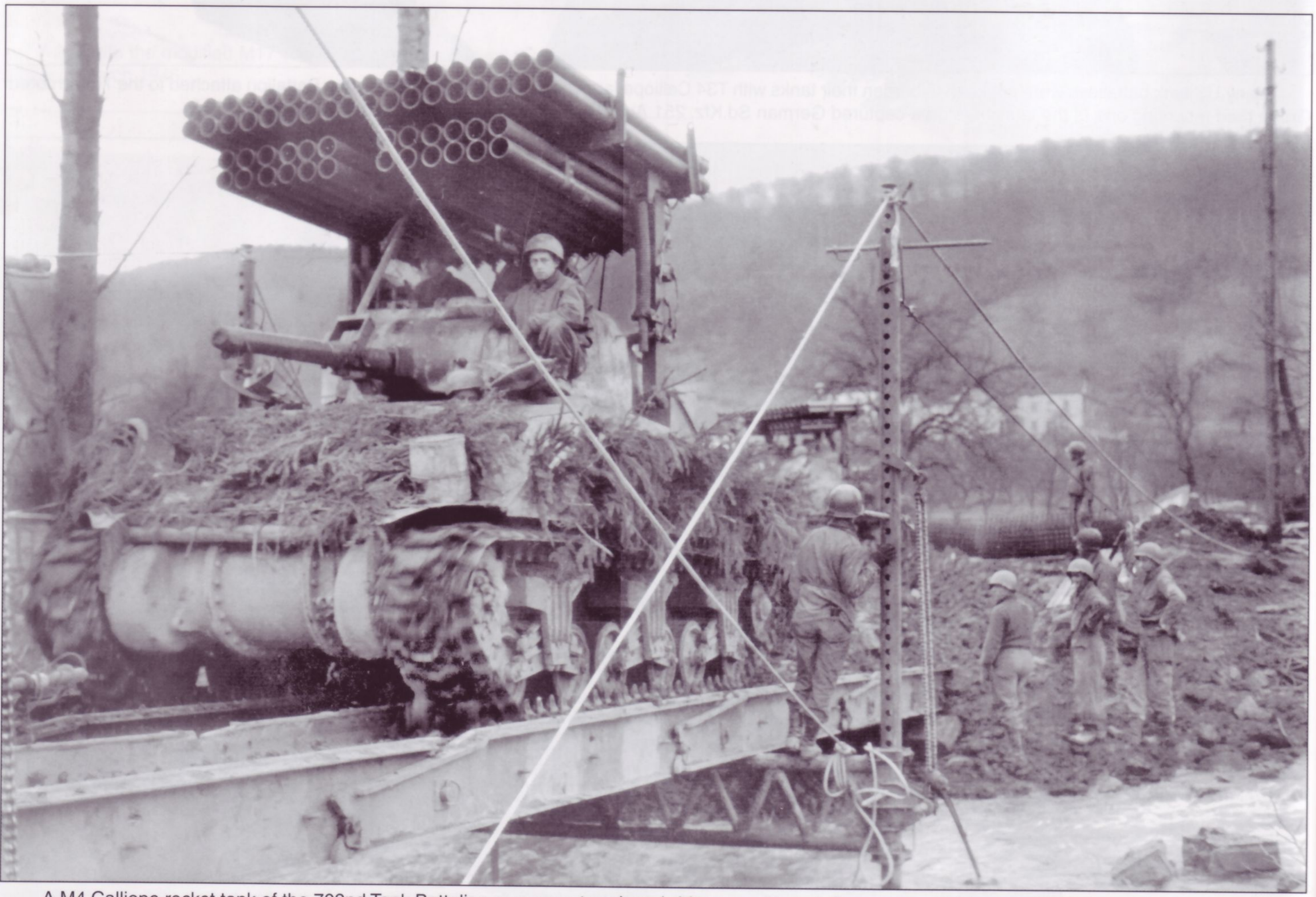
Many US tank battalions were not keen to burden their tanks with T34 Calliope launchers, so the 3508th Ordnance Battalion attached to the 7th Armored Group tried mounting one of the launchers on a captured German Sd.Kfz. 251 Ausf. D half-track as seen here on 15 December 1944.



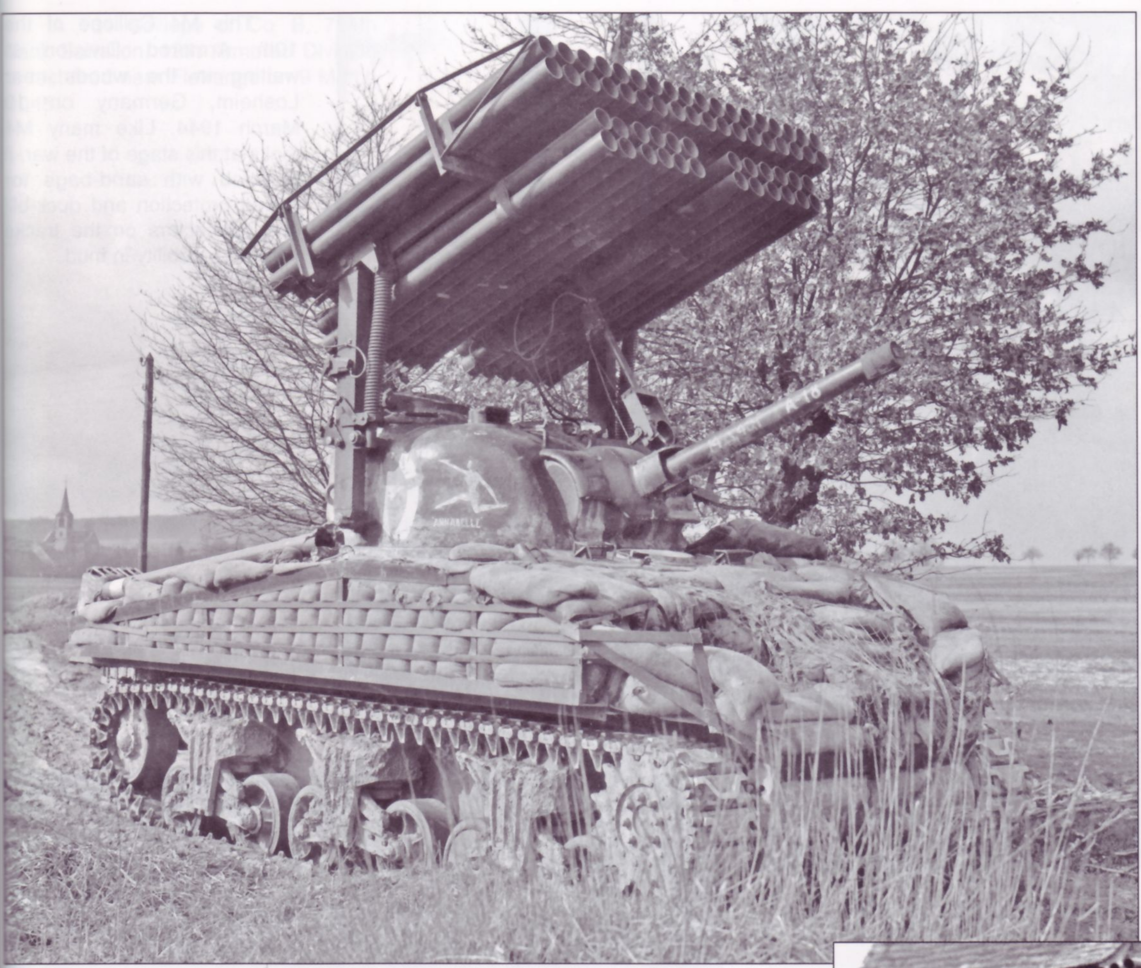
Camouflaged M4 tanks with T34 Calliope 4.5 inch rocket launcher of the 702nd Tank Battalion engage targets near Wallendorf on 16 February 1945 on the approaches to Bitburg. The fighting in the Eifel was the first time that the Calliopes were used in this sector, supporting the 5th and 80th Divisions.



The crew of a Calliope rocket tank of the 48th Tank Battalion, 12th Armored Division load their 4.5 inch rockets while operating near Dettwiller, France on 16 February 1945.

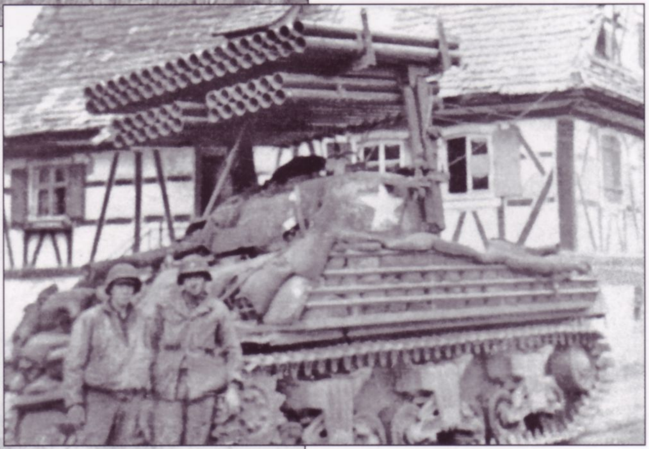


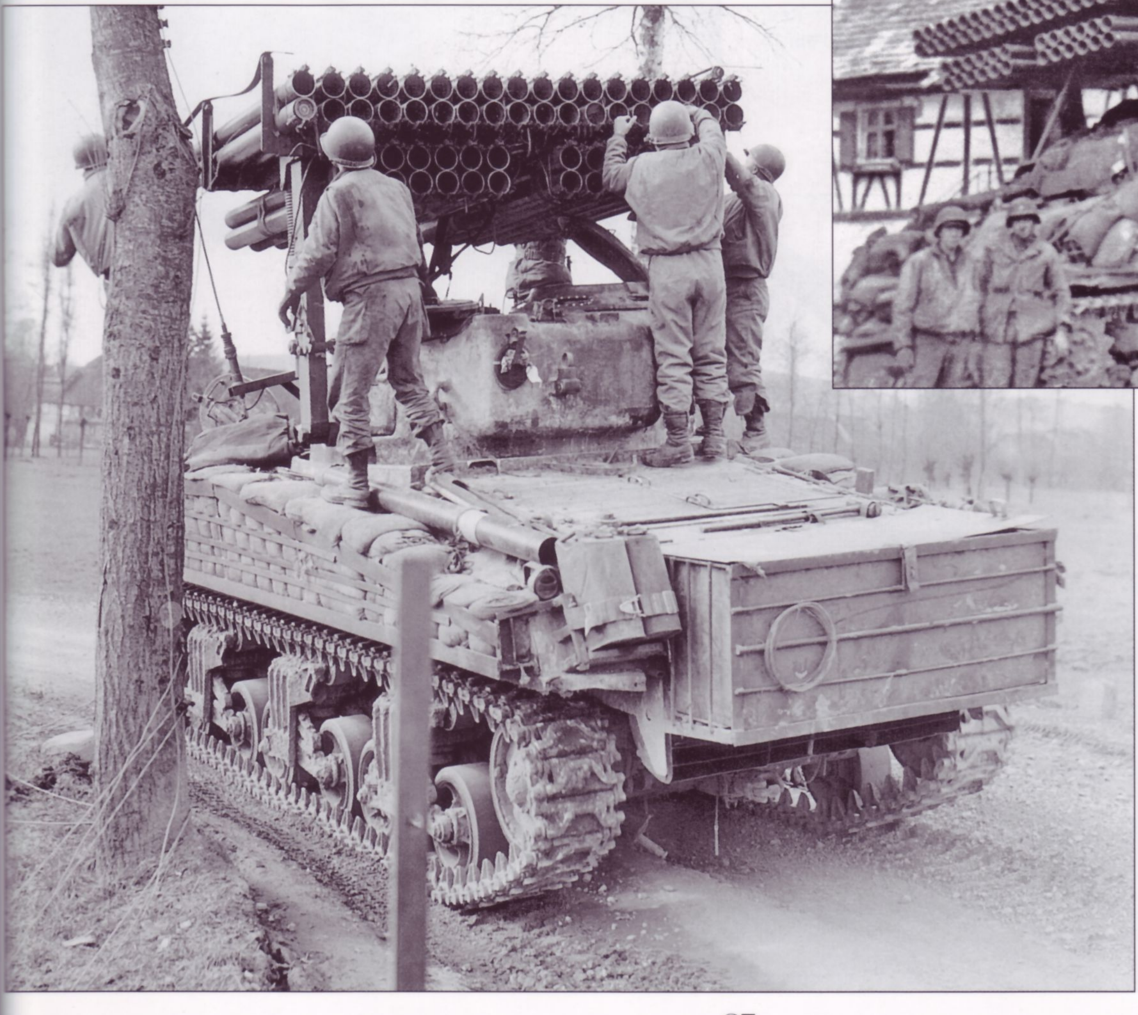
A M4 Calliope rocket tank of the 702nd Tank Battalion crosses a treadway bridge near Alsdorf, Germany on 2 March 1945. These rocket launchers were not popular in tank units which felt that such weapons were better suited to artillery units.



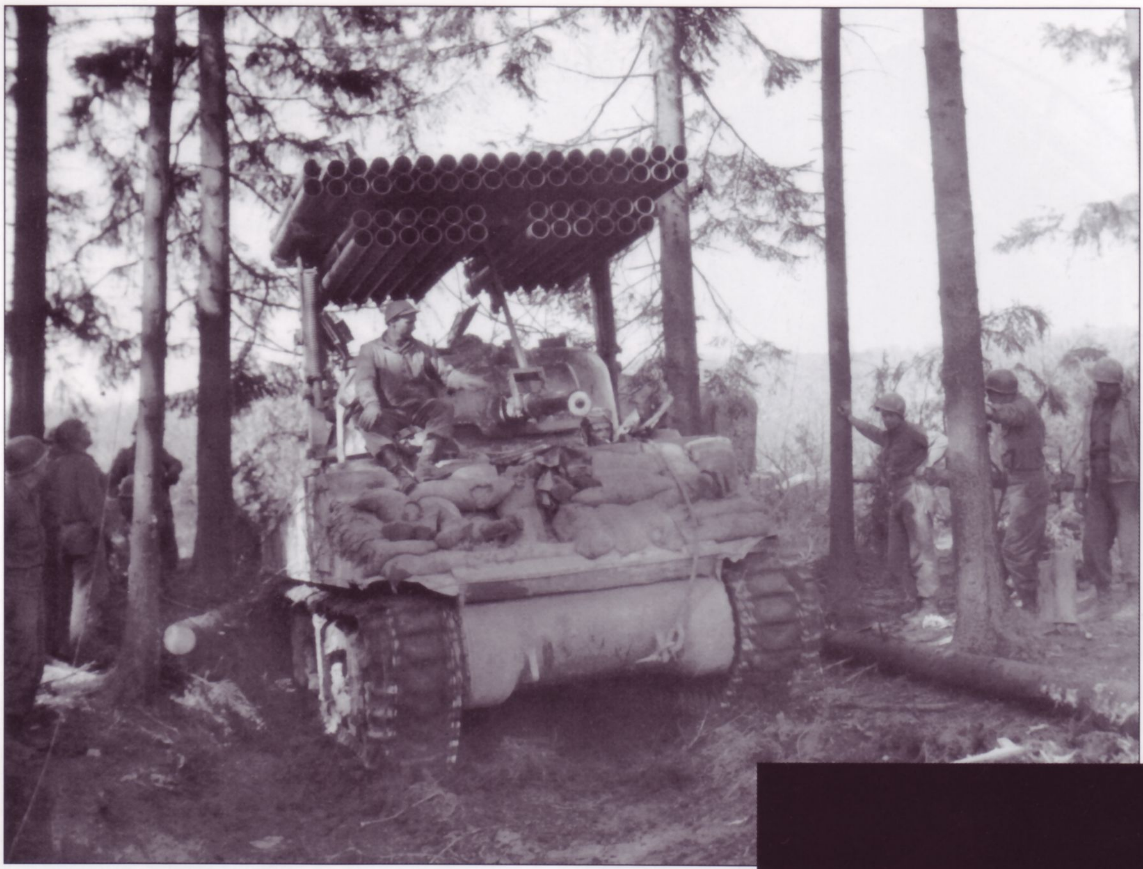
A T34 Calliope on a M4 composite hull tank named "Annabelle" of Co. A, 48th Tank Battalion, 12th Armored Division near Obermodern, France on 3 March 1945. It is fitted with the characteristic sand-bag appliqué armor racks so typical of the tank units of the Seventh Army including the 12th Armored Division.

A T34 Calliope rocket launcher of the 14th Armored Division in Germany in early 1945. Both the 12th and 14th Armored Division served with the Seventh US Army whose ordnance units created a standardized sand-bag appliqué armor arrangement for added protection.

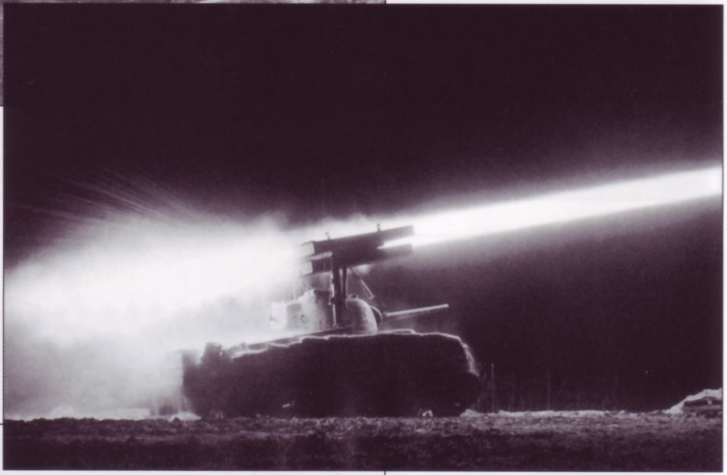




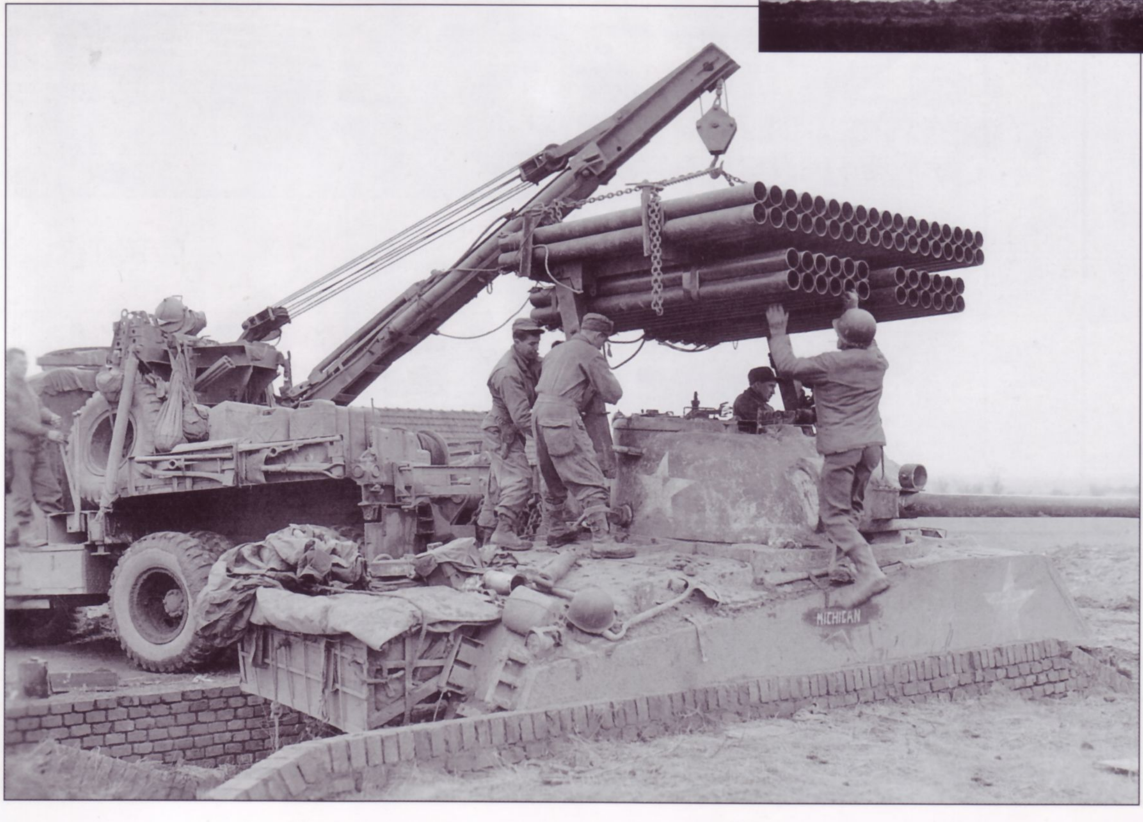
The crew of a M4A3 tank from the 48th Tank Battalion, 12th Armored Division loads 4.5 rockets into the T-34 rocket launcher during test firing near Obermorden, France on 3 March 1945. This view shows many of the features added by ordnance units to the 12th Armored Division tanks including the sandbag appliqué armor on the hull side, and the additional stowage box on the hull rear.



This M4 Calliope of the 10th Armored Division is waiting in the woods near Losheim, Germany on 10 March 1944. Like many M4 tanks at this stage of the war, it is fitted with sand-bags for added protection and duck-bill end connectors on the tracks for better mobility in mud.

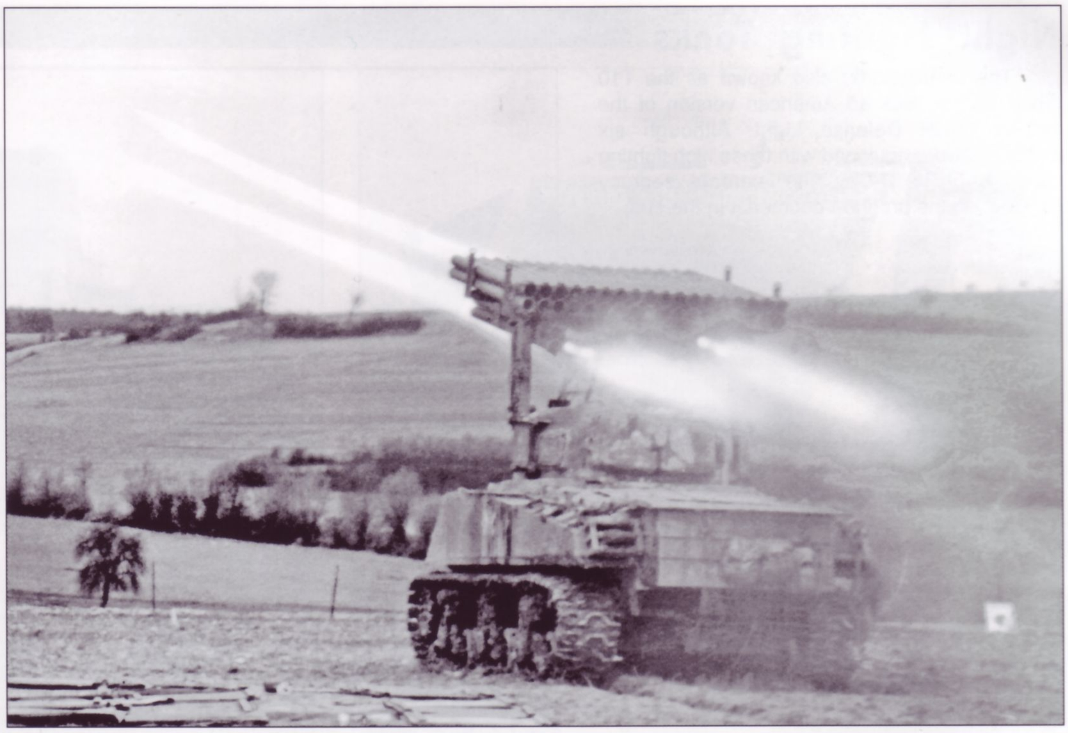


A dramatic view as a M4 with T34 Calliope of the 40th Tank Battalion, 14th Armored Division fires a rocket salvo over the Moder river near Obermorden, Germany on 3 March 1945. These operations preceded the 15 March attack into Germany.

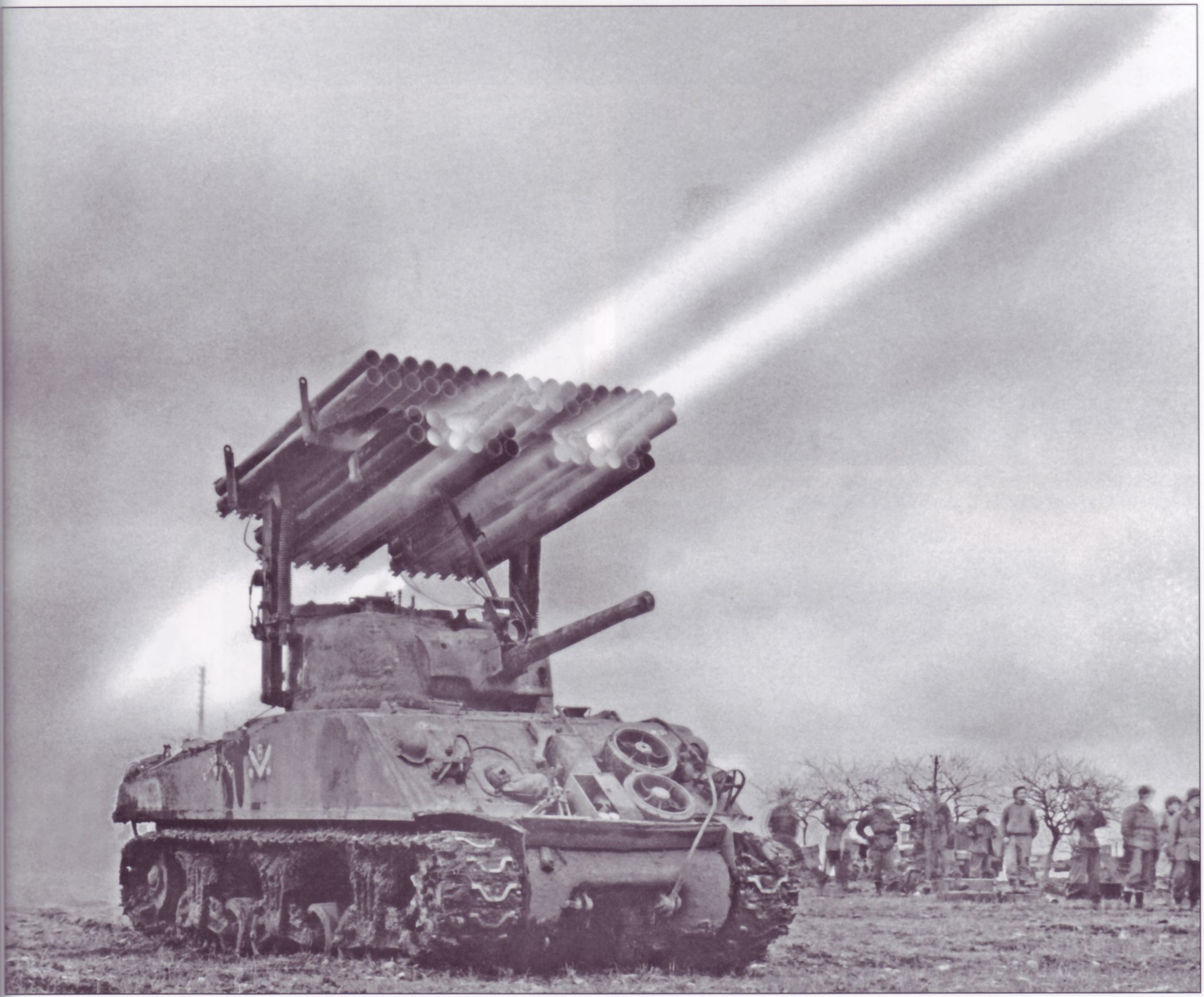


An ordnance unit of the 12th Armored Division mounts a T34 4.5 inch "Calliope" rocket launcher on a M4A3 tank named "Michigan" of the 12th Armored Division near Fletrange, France on 9 March 1944. At the time, the division was in reserve in the Saarbrucken area, awaiting orders to join Patton's Third Army for a push beyond the Rhine river.

A T34 Calliope of Co. B, 714th Tank Battalion, 12th Armored Division is test fired near Fletrange on 9 March 1945.

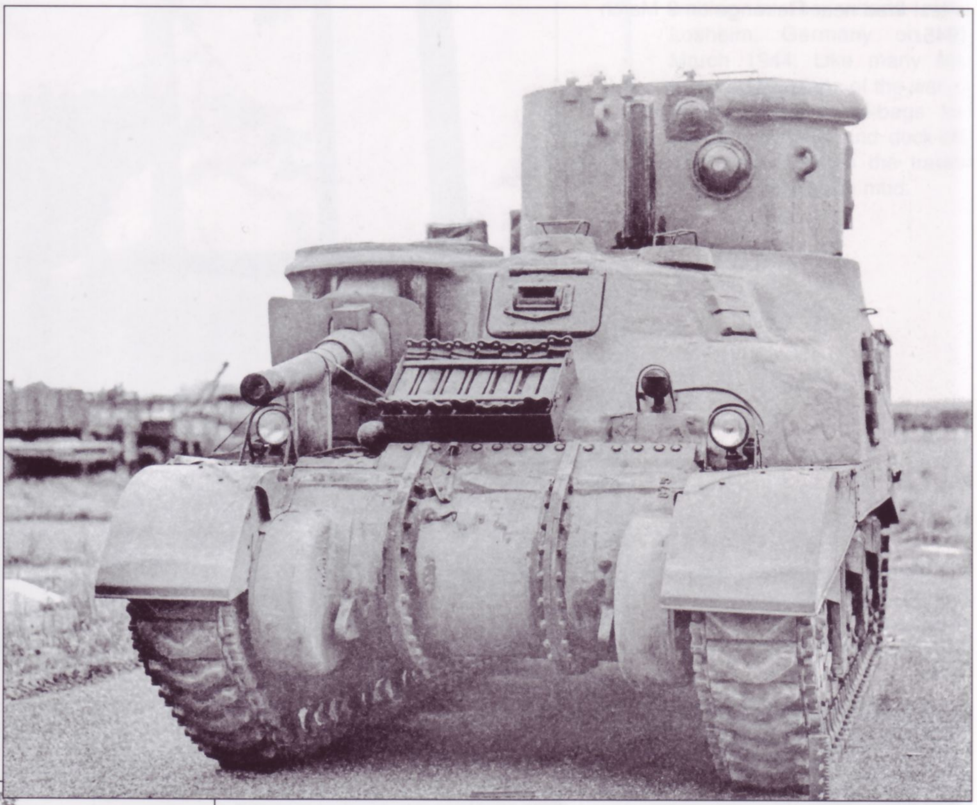


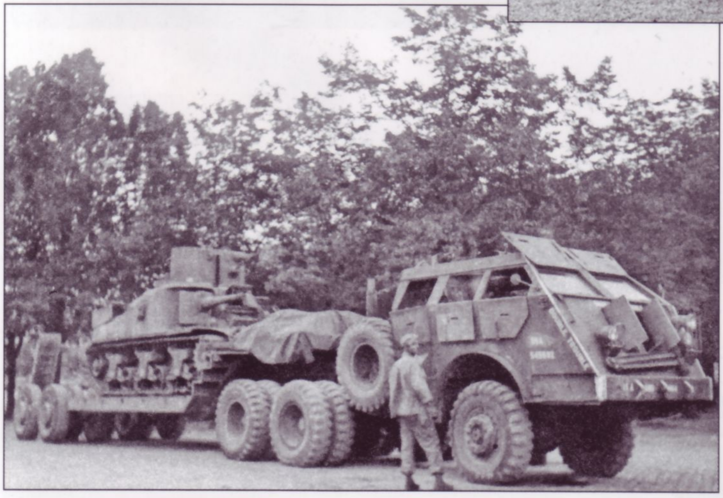
Another view of the Calliope named "Cold Storage" of the 12th Armored Division during a demonstration near Fletrange in March 1945.



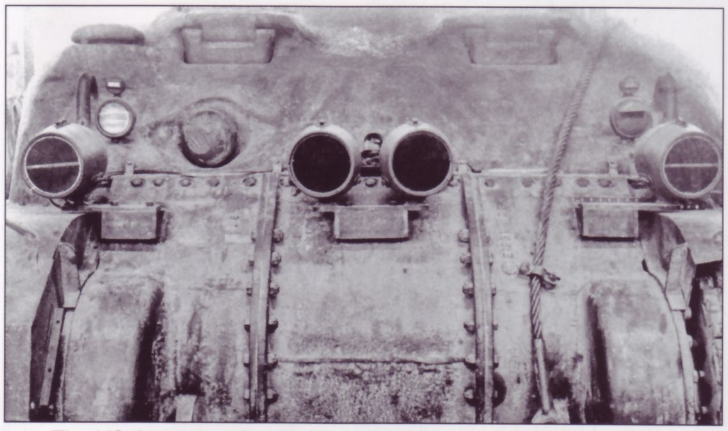
Night Fighting Tanks

The Leaflet tank, also known as the T10 Shop Tractor, was an American version of the British Canal Defense Light. Although six battalions were equipped with these nigh fighting tanks prior to D-Day, the extreme secrecy attached to the program doomed it in the end.

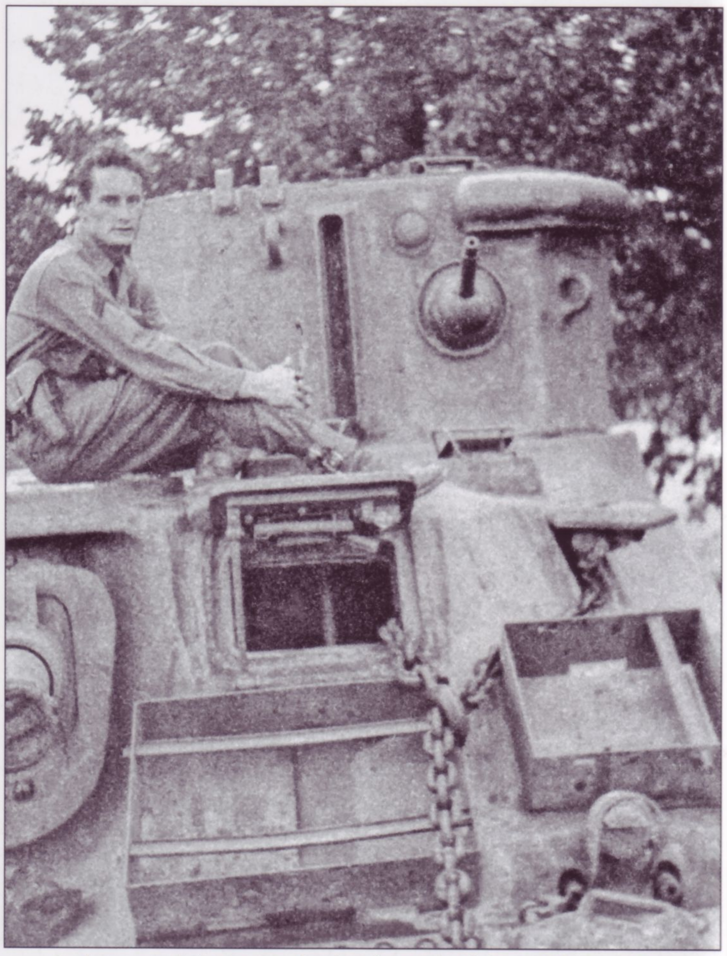




A Leaflet tank of the 736th Tank Battalion (Special) on a M26 Dragon Wagon in England prior to D-Day, based on the cast-hull M3A1 medium tank.

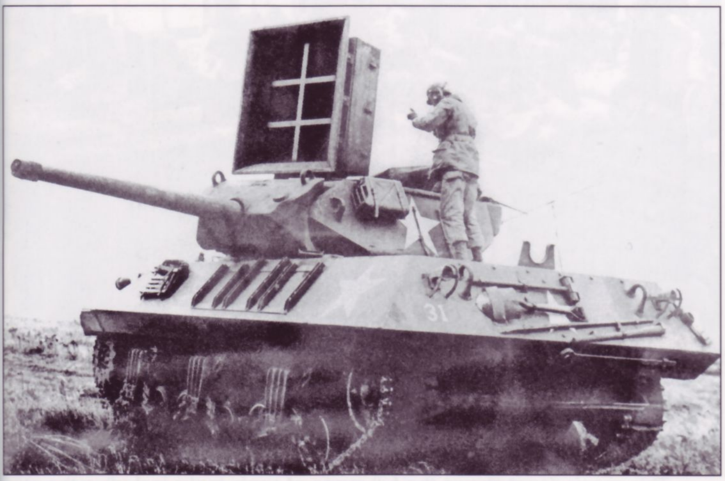


The US Army was developing night vision equipment towards the end of the war, including this RCA Special Viewing Sight system. This shows the infrared headlights fitted to the hull front which were used to illuminate in front of the tank. The driver's periscopes used special infrared sensitive metascopes for viewing the IR illumination.

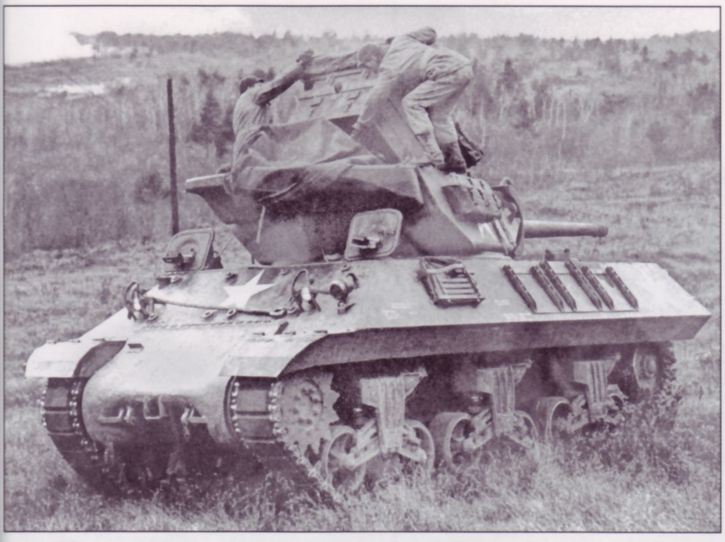


A close-up of the turret of a Leaflet tank of the 736th Tank Battalion (Special) in England prior to D-Day. The American version of the CDL had several differences from the British version including the use of a Browning .30 cal machine gun in the turret next to the searchlight aperture as seen here.

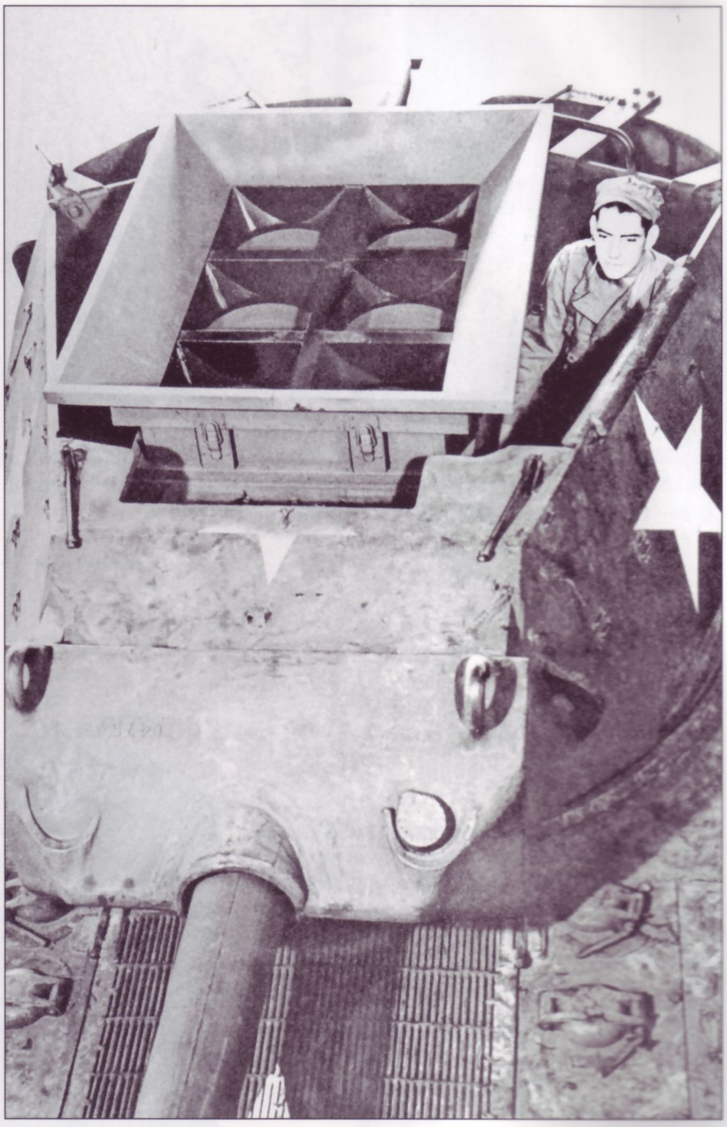
Sonic Tanks



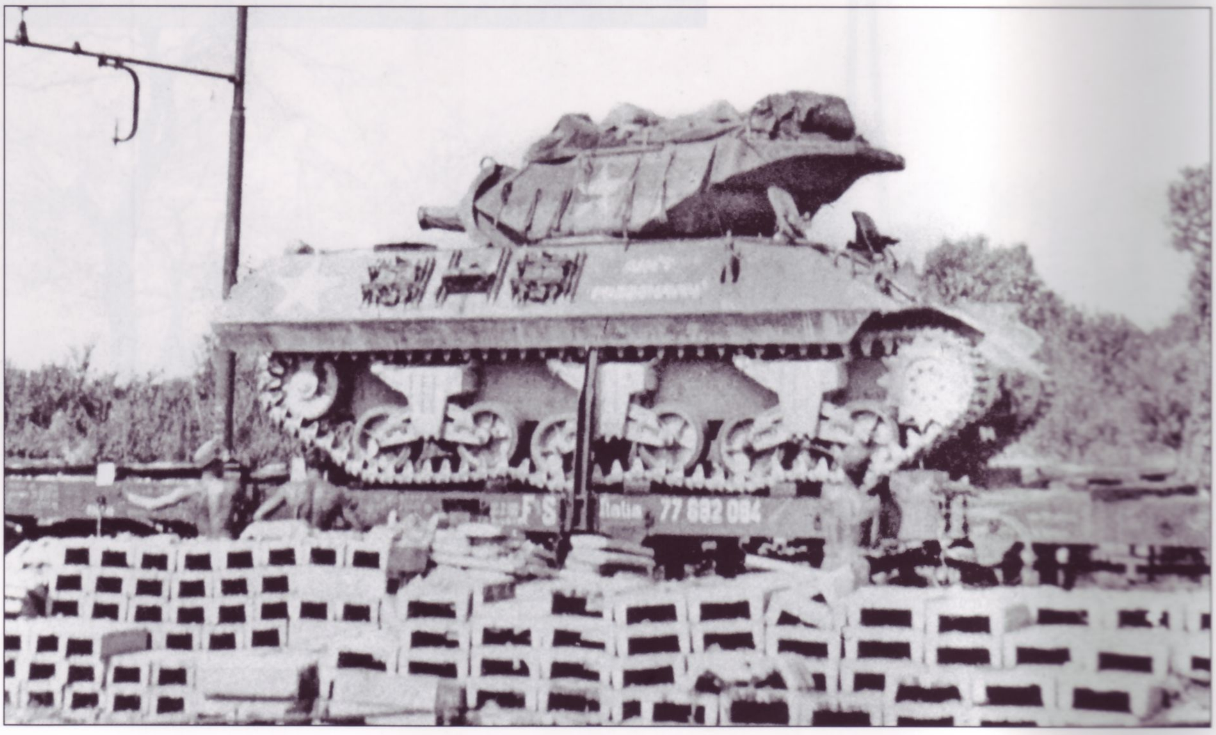
A M10 Special Car with its loudspeaker erected over the turret. These sonic tanks were designed to broadcast tank noises to confuse the Germans about the actual locations of US units.



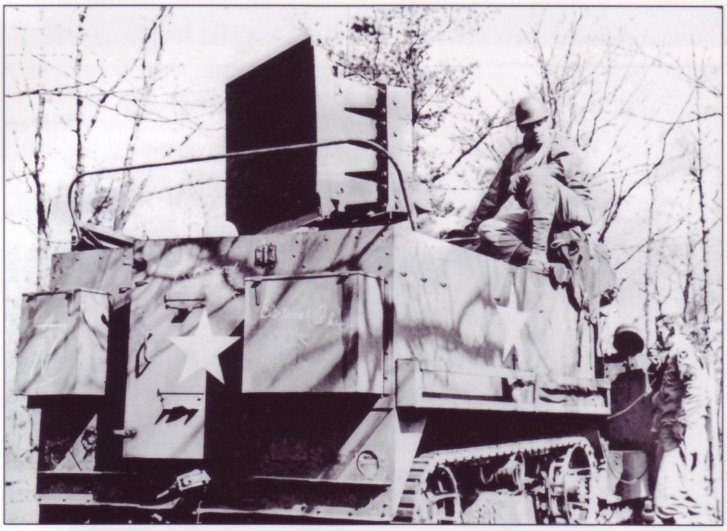
The crew of a sonic tank deploys the loudspeaker on a M10 Special Car.



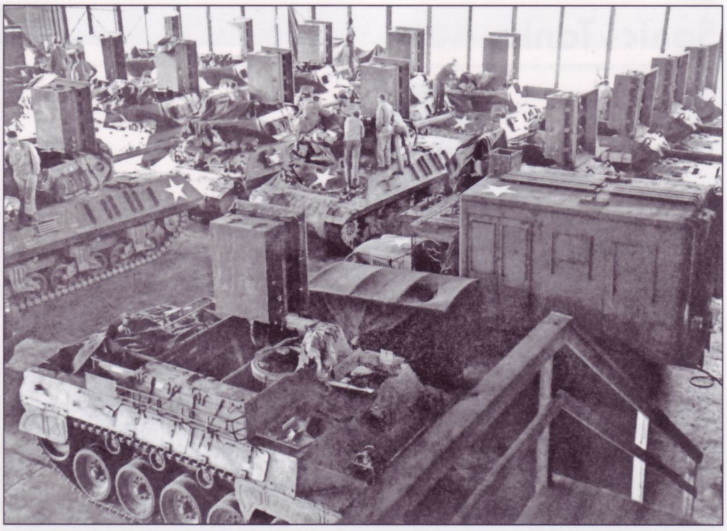
This detail view shows the loudspeaker folded down inside the turret. The gun on these sonic tanks was deleted and a dummy gun barrel fitted.



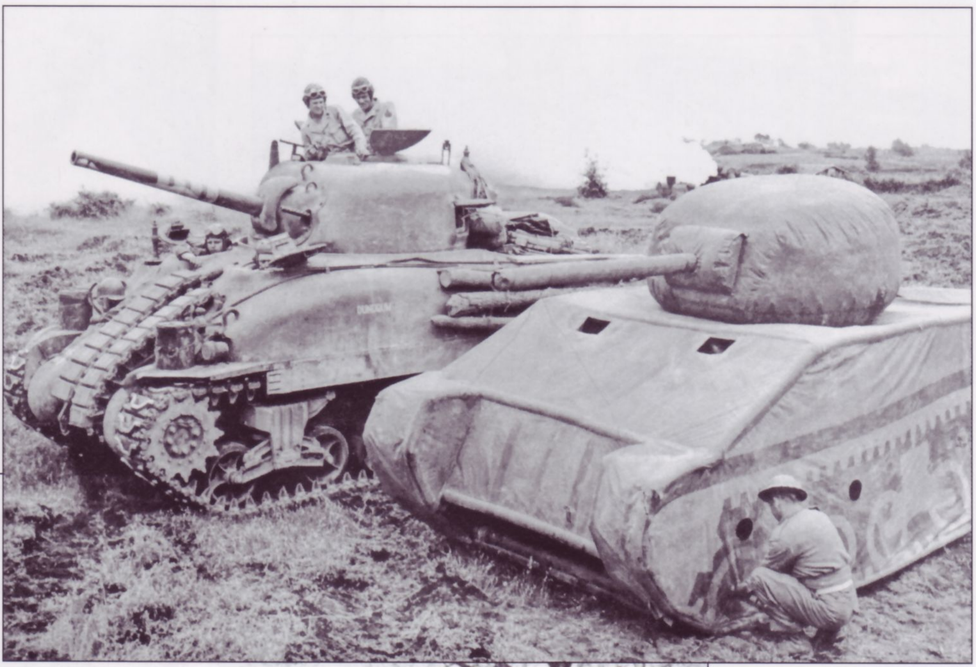
This is one of the "Special Cars" deployed with the 3133rd Signal Service Co. (Special) in Italy, named "Ain't Misbehaving". As can be seen, it is missing its dummy gun barrel.



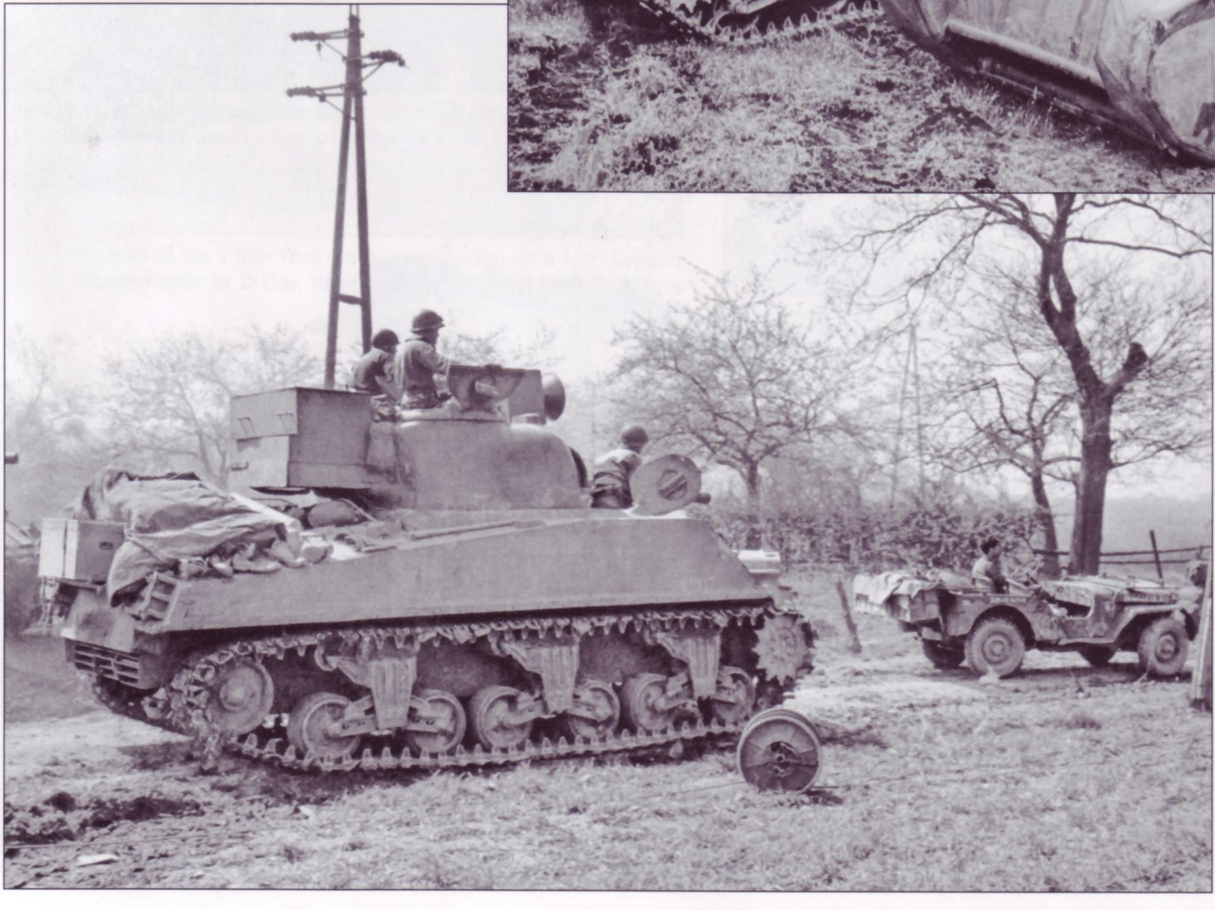
Besides the mountings on M10 tank destroyers, some of the sound systems were also mounted on M3 half-tracks as seen here.



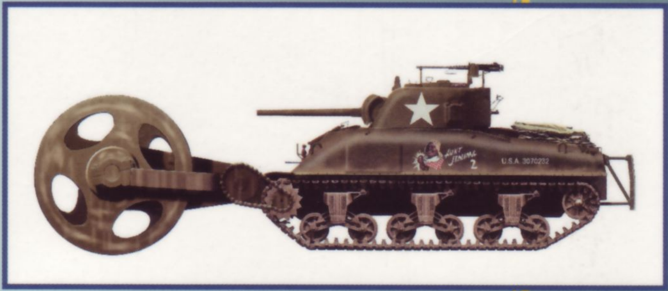
This repair depot shows the full range of sonic tanks including the rare M39 AUV sonic tank in the foreground and many M10 Special Cars behind.

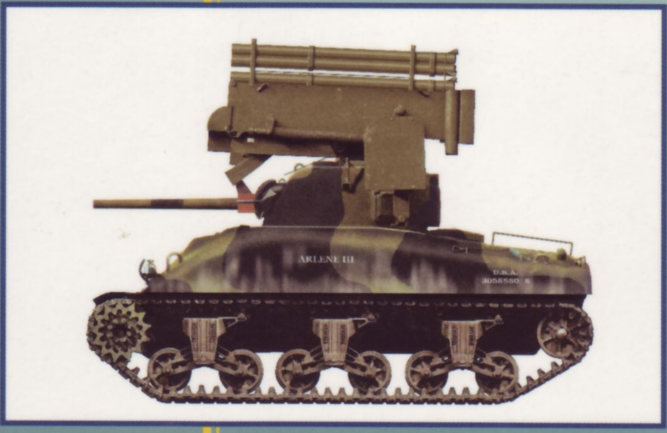


A related form of deception was the use of dummy tanks. This is a British dummy tank resembling the M4A1 nearby that was deployed in the Anzio beach-head area in May 1944 prior to the break-out as part of a scheme to shift German attention away from the actual attack sector.



Besides the Special Cars with loudspeakers, some US tank units in April-May 1945 attached loudspeakers for psychological warfare operations, especially missions to convince German towns to surrender rather than fight. This M4A3 is from Task Force Griffith of the 7th Armored Division.





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